

ESSENTIALS of EDUCATIONAL PSYCHOLOGY

CHARLES E. SKINNER

ESSENTIALS OF

Educational Psychology

Asian Students Edition

By Charles Edward Skinner
Educational Psychology

ESSENTIALS OF Educational Psychology

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ESSENTIALS OF EDUCATIONAL PSYCHOLOGY

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PREFACE

In the preparation of *Essentials of Educational Psychology*, cognizance has been taken by the authors of many helpful suggestions received from individuals who used earlier editions of this work and also of the many recent developments in the field of Educational Psychology. The intent of the authors has been to present scientific data about the learner and learning experience and to provide a broad foundation of the psychological concepts and principles needed for educational theory and practice.

Chapter 1 was written by Dr. Aileen Schoeppe; Chapters 2, 4, 7, and 18 by Dr. Francis F. Powers; Chapters 3, 8, 11, and 12 by Dr. Philip L. Harriman; Chapter 5 by Dr. Paul A. Witty; Chapters 6, 9, 10, 17, and Appendix A by Dr. J. Wayne Wrightstone; and Chapters 13, 14, 15, and 16 by Dr. W. Carson Ryan.

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CHARLES E. SKINNER

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PART

I

**PSYCHOLOGY IN
TEACHING**

1

EDUCATIONAL PSYCHOLOGY AND MODERN EDUCATION

A father helping his son to bat a ball is "teaching" that boy. A teen-age girl helping her date learn the latest dance step is "teaching." A classmate pointing out the meaning of a new word is, for the moment, "a teacher." Stimulating and directing the learning of others is the art of teaching.

This art of teaching serves also to "teach" the teacher. The knowledge of the principles of learning, applied to himself in a learning situation, provides the tools for increasing the skill with which he himself learns.

The professional teacher, or student-teacher, will be directing others in formal situations; but each will also be called upon many times to direct his own learning or that of others in informal pursuits of knowledge. He must know how to do so effectively.

Educational psychology is that branch of psychology which deals with teaching and learning. It takes its meaning from education, a social process, and from psychology, a behavioral science. Therefore, before exploring explicitly the nature of educational psychology, it is well to examine the meaning of education and of psychology.

The Meaning of Education

THE CONCEPT OF SOCIALIZATION

The process of preparing children to live in a society is called *socialization*, and every culture has some plan, in harmony with its religious, moral, economic, and other values, for accomplishing this goal. Although much of this preparation must be learned in childhood and adolescence, socialization is a lifelong process. The in-

dividual must constantly learn to fit anew into a society that is itself constantly changing in some manner.

In simple societies, this preparation is accomplished largely in the home by the parents. As societies become more complex, the responsibility for the socialization of the young is more and more delegated to formal social institutions. In a culture as complex as ours, there are many such institutions sharing the responsibility. Some strive consciously to control the environment; others rarely exercise any direct control, even though they may exert important educational influences. For example, the playground, the club, and television may contribute much to socialization and yet exercise only very meager controls to this end. Other socializing agencies, such as the Boy and Girl Scouts, libraries, and churches, have a more definite educational role. Even in our complex society, however, the home is probably still, in most instances, the most powerful agency.

The school is the principal formal agency for socialization. It has been given the responsibility for certain types of learning; historically, it has been the institution for the transmission of the culture to the next generation. More recently, it has added a second objective, that of helping the young to grow into their adult roles in that culture. The currently evolving concept of the responsibility of modern education embraces both objectives as part of the same goal.

DETERMINANTS OF EDUCATIONAL THEORY AND PRACTICE

Educational goals and practices are not static. They change as the beliefs and values of the people change. The goals of education—the *what* and *why*—reflect the values of the group, but the nature and needs of the learners determine the *when* and *how*—the curriculum pattern and the methods used to reach the goals. The determinants of any educational theory and practice are manifold—philosophical, anthropological, sociological, biological, and psychological.

When educational leaders and thinkers attempt to determine what is worth learning and why, they are entering the realm of philosophy. Philosophers, concerned with a good and desirable behavior, have always played a major part in formulating suitable objectives for schools and in determining which means to use for achieving these objectives. But more and more, the sciences—biological, physical, and social—have offered insights toward a more realistic formulation of educa-

tional goals. Biological studies, for instance, have delineated more precisely the limits of the organism with respect to learning and behavior. Anthropologists have provided a basis by which comparisons can be made in the socialization goals of various cultures. Sociologists have studied social institutions, pointing up their weaknesses and strengths. Psychologists, through scientific descriptions of human behavior and the organic and emotional requirements of the human organism, have had a profound influence upon the objectives of modern education. This influence will be even greater as we work toward a comprehensive, universally accepted theory of learning and behavior. The behavioral sciences help schoolmen and educational philosophers in selecting their objectives realistically and, consequently, aid them in attaining them more fully.

THE GOAL OF MODERN EDUCATION

In a democratic society, the goal of socialization, and therefore of education, is to help the individual become increasingly self-directive in ways satisfying and rewarding both to himself and to the society. The infant is closely supervised, with many restrictions placed upon him for his own protection. As the child grows, he "identifies" with others, the directing is internalized, and the child exercises constraints upon himself. We all know that the normal six-year-old can more nearly direct himself and be responsible for his own behavior than the normal two-year-old. Ways of self-direction satisfying to the individual are determined by the desires, aspirations, and values of the individual's emerging personality, or self, and so are unique for each person. To define the ways satisfying to society is not easy. What society considers appropriate behavior differs for each age level, but the expectations at each age level are partially determined by what the society expects of the individual as an adult. Our society has certain common expectations of all but even these are more fluid than in many societies; largely, it strives for optimum development of the potential of each of its members.

THE ROLE OF THE MODERN SCHOOL

The school has the unique responsibility for teaching certain types of knowledge and skill and developing certain attitudes. It shares with other agencies the responsibility of teaching the developing individuals how to work, play, and live with others. The school aims to help

the learner satisfactorily integrate his needs and purposes with those of his social world. Primarily concerned by historic tradition with the developing intellect of the young, the school also contributes to their social and emotional development.

THE ROLE OF TODAY'S TEACHER

What is the role of the teacher in the modern school? It is obviously not that of dispenser of knowledge and hearer of lessons. The modern teacher is concerned with the kind of experiences a child must have, as a thinking-feeling-doing person, in order to grow up in a democratic society. Having to adjust to an endless variety of individuals and situations, the teacher must consider teaching *individuals* his primary job. He must be ingenious enough to devise situations which help each individual become increasingly skilled in living and learning. This necessity involves on-the-spot assessment and prescription, for which there are no predetermined formulae. Because the teacher's judgment and insight—subjective factors—enter into both the diagnosis and prescription, teaching is, in the last analysis, an art. In his work, however, the artist-teacher makes use of applied science. His skill in selecting and using scientific principles determines the artistry of his teaching.

The science most basic to education is psychology. Aside from specific courses in educational psychology, teacher education as a whole should be psychologically sound. The teacher needs psychology to bridge the lives of the young and the aims of education in our democratic society. Teachers need to understand the learners in order to understand our culture, and, most of all, they need to understand themselves as guides of the young. To such understanding, psychology has much to contribute.

Educational Psychology as a Scientific Discipline

THE SCIENCE OF PSYCHOLOGY

Psychology is the science of behavior and experience. Its goals are those of all science—description, prediction, and control. When these goals are reached, we have understanding. In psychology, the organism (which behaves and experiences) is considered as a dynamic, lawful system. In striving for an understanding of the laws of this

system, psychology uses the methods of all science. The individual is observed as any other phenomenon is observed, and only conclusions which may be scientifically verified are accepted. The facts of any science are thus accumulated.

Science aims to describe as many facts as possible by the smallest possible number of principles. Currently, psychology lacks a neat set of integrated principles, partly because the organism and the environment are constantly changing, partly because psychology as a science is relatively young and has not had time to evolve such principles. A steadily increasing number of researchers have felt challenged to find answers in this science. Many subdivisions have developed, each of which seeks to emphasize a particular area of psychology.

Educational psychology is one of these subdivisions.

THE FUNCTIONS OF EDUCATIONAL PSYCHOLOGY

The primary aim of educational psychology is to contribute to the value and efficiency of the learning situation. To attain this goal, educational psychology must include the study of problems of teaching and learning and must be an integral part of the preparation of educators.

Just now educational psychology is experiencing an exciting renaissance which should greatly affect both teacher-preparation and teaching. Yet, despite all the advances in recent years, there are still questions which plague us today for which scientific answers are needed.

THE HISTORY OF EDUCATIONAL PSYCHOLOGY

The beginnings of educational psychology can be traced back to Aristotle. But the science of educational psychology stems from the work in Europe of Pestalozzi, Herbart, and Froebel, who attempted to "psychologize" education by revising the methods of presenting subject matter. Modern experimental educational psychology, however, really began in this country about the turn of the present century. Any survey of the history of American education in the twentieth century is highlighted by the significant and far-reaching contributions of educational psychologists, two of whom—Charles H. Judd and E. L. Thorndike—probably have had as great an influence on contemporary American education as anyone. Much of the

work of these men, along with that of G. Stanley Hall, Lewis M. Terman, William C. Bagley, Guy M. Whipple, and many other vigorous leaders in the field, was done in the first few decades of this century. These men attempted to apply the scientific method to the study of problems they considered important to the educative process; they developed methods to investigate such problems and theories to explain the findings; and they modified methods and theories as new findings required it.

More recently, educational psychologists have tried to apply to education appropriate methods and theories developed in other disciplines and other areas of psychology. This approach has not been very rewarding. As Haggard says,

The reliance on hand-me-downs has frequently led to superficiality and the cluttering of textbooks with irrelevant "facts," to misstatements or distortion of theories and findings, and to unwarranted application of them to educational situations. . . . Under such conditions it is not surprising to find expressions of dissatisfaction.¹

Late in the 1940's, the Policy and Planning Board of the American Psychological Association appointed a committee to study the function of its Division of Educational Psychology. In 1947 the National Society of College Teachers of Education appointed a Committee on Educational Psychology to determine the function of educational psychology in the preparation of teachers. As the result of five years of study, on the basis of their findings, analyses, and definitions, this Committee published a report ² in 1953 which delineated rather specifically the areas and content necessary to the educational psychology curriculum so that it might contribute significantly to teacher-education. This of course also points up the areas on which educational psychology must concentrate its research.

In the past several years, educational psychologists have considerably broadened their vision from what it was a decade or two ago. They are beginning to seek answers to questions that are pertinent to real-life living and learning. They are becoming more confident that they can make fundamental contributions to the understanding

¹ Haggard, E. A., "The Proper Concern of Educational Psychologists," *The American Psychologist*, IX, No. 9 (September, 1954), pp. 540, 541.

² *Educational Psychology in Teacher Education*, Monograph No. 3 of the National Society of College Teachers of Education (Ann Arbor, Michigan: The Society, 1953).

of behavior and education that may profoundly affect the lives of all learners.

METHODS AND TOOLS OF EDUCATIONAL PSYCHOLOGY

In gathering and classifying its data, educational psychology uses the methods and tools of science. For example, in establishing a definition of some particular behavior, the educational psychologist would consider his data under the following categories:

1. Physiological variables (sensory processes, body size and physique, physiological functioning)
2. Learning variables (principles and situations for the best results, problem solving processes, deterrents to learning)
3. Capacity and aptitude variables (assessment of potential, varying from the simple determination of strength to complex measurement and evaluation of intellectual capacity)
4. Personality variables (the unique functioning of the individual, his relationship to his social situation, values and aspirations, motivations)
5. Social-group variables (the individual's status in a group, both from his point of view and that of others)

In reality, of course, all these variables are interrelated.

In any study, the problem determines the method and research design. Here are some of the most commonly used methods for gathering data:

1. **Anecdote.** The investigator notes incidents in the behavior of the individual being studied. Because of the subjectiveness of this device, the result will be a qualitative picture which cannot be relied upon independently; it may, however, aid in interpreting more quantitative measures.
2. **Naturalistic observation.** Essentially a refinement of the anecdotal method, this is more systematic. For example, one observes over a definite period of time a group working on a uniform task. Inspection—the observation of one's own mental operations—is a form of naturalistic observation, because, for purposes of evidence, it is done within a patterned framework.
3. **Questionnaire.** This includes both written and oral questionnaires and test methods. The latter, although more quantitative than many questionnaire methods, like them, keep the conditions constant and vary the subjects. In the so-called experimental methods below, the investigator keeps the subjects constant and varies the conditions.

4. *Controlled-variable experiments.* Here the investigator studies the relationship between one stimulus variable and a related response variable, while seeking to control all other stimulus variables. The experimental, or manipulated, stimulus variable being studied is called the independent variable. The response variable, which is subject to the manipulations of the independent variable, is called the dependent variable. This has been the basic experimental design used for most laboratory studies in educational psychology and also for many in the classroom.
5. *Multi-variable experiments.* Psychologists realize that the controlled variable method is, in most instances, an oversimplification, and generalizations derived from it are of limited value. For one thing, it is difficult or impossible to control all stimulus variables. Also, one usually wishes to study the differences in individuals of varying levels of ability or motivation. For example, in investigating the effectiveness of various teaching methods, one needs to use each method (stimulus variable) with children of differing potential and to determine the achievement (response variable) of the subjects under the differing conditions. Thus, a third variable, in this instance an organismic variable, is introduced; but, by so doing, one is able to make a more precise generalization from the results of the investigation.

The development of factorial design techniques has made possible the study of a number of simultaneously varying factors and their relationships. This is a marked advance in methods of studying behavior. It is obvious that the school situation involves interaction of many factors and so does not follow the simple model of the laboratory experiment. Researchers must develop principles from studies of real school problems in their natural complex setting, and the new methods offer promise of improvement.

6. *The case study.* Used in clinical work, the case study is a combination of data gathered by any or all of the above methods. It usually involves the intensive study of one individual. Most research described above is aimed at collecting information on many individuals in order to arrive at a generalization about a specific behavior pattern.
7. *Cross-sectional method.* In the cross-sectional method, a large sample is studied to determine general trends at a specific time.
8. *Longitudinal method.* Here a smaller sample is studied through time to note developmental trends.

The cross-sectional and the longitudinal are but different approaches to the other methods.

There are many tools available to the researcher. Again, the ones used are determined by the purpose of a particular study. Some common tools are: standard tests, inventories, and rating scales; laboratory apparatus; projective techniques; situational tests; biographical

and autobiographical data; interviews; and sociometric techniques. In addition, there are the statistical techniques³ for organizing and analyzing raw data, including the different measures of central tendency and deviation, correlational techniques, ways of analyzing variants and testing probability.

RELATIONSHIP TO OTHER FIELDS OF PSYCHOLOGY

How does educational psychology "fit" into psychology as a whole? How does it compare and contrast with the other subdivisions?

Educational psychology is inherent to most of the other categories, for most are concerned to some degree with learning. For example, the psychologist in advertising seeks ways to get people to *learn* to want a certain product; in industry, the psychologist is concerned with ways employees *learn* to work efficiently.

General psychology is concerned with the basic principles that underlie behavior, not only of humans but also of animals. For the teacher, general psychology offers considerable enlightenment on his own behavior as a person as well as on his students' behavior. Other subdivisions tend to deal with specific problems or applications of psychology.

Developmental psychology, the study of human growth and development, is concerned with a wide variety of areas, ranging from the early years of childhood, through adolescence, and even into the adult years of life. The emphasis is on repeated measurements or observations of the same individuals for relatively long periods of time to ascertain normative developmental patterns and the range of deviations therefrom.

Abnormal psychology studies those examples so deviant that they cannot be considered in the range of normality. Some of the modern principles of normal behavior have had their beginnings in the systematic study of abnormal behavior.

From clinical studies we have learned about mental hygiene principles and diagnostic techniques.

Social psychology is concerned with the behavior of individuals in relationship with other individuals and groups. Because much school learning depends on interpersonal relationships and takes place in group situations, the teacher can learn much of importance from social psychology.

³ See Appendix A.

Each field enriches the others. Educational psychology receives from the others those principles that have a direct bearing on the growth, learning, and adjustment of children. In turn, educational psychology has provided profitable research, especially in the areas of learning and social behavior. For example, observations of learning by atypical children and those with learning difficulties have enriched guidance practices and clinical insights. And observations of groups in classroom activities have contributed to theories in social psychology; in fact, the social dynamics of the classroom offers one of the most promising frontiers for research.

INTERRELATIONS WITH OTHER DISCIPLINES

Educational psychology also utilizes relevant information from other disciplines. Medicine and biology have contributed concepts about developmental processes and deviations thereof, about motivating drives, and about the physically handicapped. Psychiatry has given additional understanding of the atypical child and adjustive mechanisms; therapeutic techniques developed in psychiatry also have many implications for improving learning. Comparative cultural studies in anthropology, the development of the social class concept in sociology, and the designation of values unique to each social class have contributed to the evaluation of many educational practices and also to improved understanding of the intrinsic motivations that prompt people to act.

In recent years there have been many encouraging attempts at interdisciplinary studies of problems in human behavior. Scientists and scholars cooperate in a research program, and each offers contributions from his discipline to the solution of a single problem. Several major educational institutions have formalized such groups, which have made highly significant contributions to research. Among these groups are the Institute of Human Relations at Yale University, the Committee on Human Development at the University of Chicago, and the Center for Advanced Study in the Behavioral Sciences established at Stanford University by the Ford Foundation.

Educational Psychology in Teaching

Educational psychology is the foundation stone in the preparation of teachers. How can the student best assimilate it? Traditionally, it has been taught as a separate course. Some educators have advocated

courses on a technological level and others, on a scientific, theoretical level. The former stress carefully selected factual material, whereas the latter minimize facts and stress fundamental theory that students can apply to problems that arise in the future. Still others have thought that educational psychology failed greatly to influence the behavior of teachers because the principles are learned apart from their application. This group has radically suggested the elimination of the course in educational psychology in favor of absorbing it as an integral part of student observation and apprentice teaching, but this seems a short-sighted solution that ignores many principles of learning. The question is actually one of emphasis. Theory and application are not separable and must supplement each other. The justification of any approach is in making educational psychology function for the teacher.

Just as the child brings experience to the learning situation, so does the student of educational psychology. If his relevant experience is limited to recall of his own youth, he is severely handicapped. Therefore, just as, in the future, he should seek ways to enrich his pupils' environment, so now should he seek to enrich his own by as many contacts as possible with children in learning situations. Observation in actual schoolrooms is excellent, but there are countless other possibilities—volunteer work with settlement houses, boys' and girls' clubs, Sunday School classes, neighborhood baseball teams, summer camps, and even babysitting. If there is the opportunity for directed observation, so much the better. Educational psychology should not be studied in a vacuum. The textbook, however, should serve as an integrator. It should furnish a logical plan for systematizing generalizations and allowing for their application in sensible and meaningful ways. If the student would make his observations and experiences with children truly functional, he would continuously enlarge and enhance his understanding of the learning process. Psychology functions for a teacher when experience with children can interact with a growing comprehension of the general principles of learning.

Briefly stated, these principles are concerned with the *when*, *what*, *why*, and *how* of learning. The following brief survey will suggest those facets of a teacher's work in which the findings of educational psychology are utilized. These will be delineated in greater detail throughout the book.

NEEDS OF LEARNERS

Educational psychology helps the teacher in understanding the learner. Increased knowledge of human maturational processes and developmental stages has augmented our understanding of the needs that dominate each age span. This knowledge of maturation tells the educator much about the "when" of learning. It is futile, and often even disastrous, to attempt to teach the child what he is not ready to learn. In recent years, the elementary school curriculum has profoundly changed as a result of scientific findings about child development. Formerly, the prevailing formula was to teach "the three R's" first and then, if any time remained, to introduce some of the "frills," such as art, rhythms, and physical activity. The modern school, as a result of psychological studies of readiness, introduces expressive and creative activity early and delays until a later age some of the academic learning, such as mathematics, which involves highly abstract mental functioning.

The personality needs of the individual are of major importance to learning readiness. Basically the same for all individuals, these include need for affection, for self-respect, for independence, and for approval by peers and persons of authority. However, the emphasis on these needs varies greatly among individuals, according to both age and the person's past experiences and their effect on him, his goals, his values, his aptitudes—in short, according to his unique personality. Although generalizations can be made about maturational levels for all humans, there are many variations in such levels because of the differences in individual personality needs. Research in personality has distinguished many of these variations and established methods whereby teachers and others may define and describe an individual's uniqueness. Pertinent studies have consistently shown the importance of the individual's value system and the controlling influence of intrinsic motivation on learning; many investigations have considered the importance of perception as influenced by personality, and the selective factors operating in the perceptual process. This is opposed to the view that a child receives the stimulus the teacher gives; it now seems more accurate to say that the individual selects, out of the many impinging stimuli, those which best meet his needs and accord with his values.

Teachers, particularly in the secondary schools, will probably

change their approaches markedly as a result of recent large-scale studies that have attempted to refine generalizations about the values characteristic of each age level. Other pioneer current research seeks to describe the processes of expanding self-understanding, for this is a major goal of psychologically healthy persons throughout life. The educational program of the future probably will center on the intrinsic motivations of individuals, rather than on those extrinsically imposed. The teacher will attempt to modify the intrinsic motivational system, and not stress the extrinsic system, which is the common contemporary aim. More attention will be paid to why the learner learns. In short, character education will be made more congruent with psychological knowledge.

Psychology offers assistance to the teacher in the problem of skills and the successive acquisition of them at appropriate times. A learner brings his past to a new learning situation, and success in new learning is to a large extent dependent on past skills and successes. Basic to the acquisition of skills, of course, is the learner's potential. Whatever the potential, it is modified through experience. Limited experience does not allow for the fullest development of potential. Enriched experience permits progressive development and the acquisition of skills requisite for new, more complex learning. In other words, the individual has skill needs as well as personality needs. Although the level at which various skills are learned may depend upon both the individual's developmental stage and personality needs, successive refinement of skills is essential to any learning sequence. Reading, for example, is requisite for much learning; a certain finesse in swimming is highly desirable before one attempts diving. In countless ways, knowledge about learning processes will aid the teacher in his primary task of assisting the learner to learn.

One of the basic and major concerns of educational psychology—one which permeates all our understanding of the learner and his needs—is the matter of the individual differences among people. Teachers and administrators seeking to develop a school that is well adapted to the individual needs of children can learn much from educational psychology about the characteristic differences of learners and the unique needs of each.

ADJUSTMENT AND DISCIPLINE

Closely interwoven with an understanding of needs is an under-

standing of the adjustment process. Adjustment means how well a person gets along in a situation. It is a matter of degree, a description of the relation between the individual and his environment. The optimum in adjustment is the goal of mental hygiene, and that is the prevailing emphasis in modern education. This suggests that the individual learns to direct his energies in ways gratifying both to himself and society. Good adjustment does not necessarily mean a complete change in either himself or his milieu but may call for some change in both. Here educational psychology can "instruct" the teacher. If the demands of a situation are unreasonable, one can expect poor adjustment by many. For example, it is unreal to expect long periods of undivided attention from young learners. With our present-day knowledge about attention spans, we can avoid difficulty by not expecting the impossible of children. Conversely, it is equally undesirable to expect too little of them. Modification of the personality may often be necessary for good adjustment, and the perceptive, sensitive teacher is constantly on the alert to determine how well the child is getting along with himself. Thus, if the child has deep conflicts, his docile behavior cannot be labeled good adjustment. Conversely, an aggressive child may be showing the signs of healthy personality development.

This concept of adjustment has implications for discipline. If one accepts the basic tenet of modern dynamic psychology that all behavior is goal-motivated, then one asks what a particular behavior pattern means, what goal the individual is seeking. This immediately transfers the function of discipline into a new context. The individual strives by his behavior to become more acceptable to himself. Sometimes, if he cannot obtain this necessary self-enhancement by one means, he tries another which may be unacceptable to those in authority or, possibly, to his own social group. Paradoxically, unpleasant behavior may sometimes signify an improvement in a child's adjustment, and at such times the teacher may encourage rather than stifle it.

The same need may show itself by different behavior in different people (or even within the same person), and the same behavior may be symptomatic of diverse needs and strivings for satisfactory adjustment. The challenge to the teacher is to discover the real meaning of the child's behavior. An example related to a subsequent one on curriculum planning may serve to illustrate this point. A third-grade

class was discussing healthful foods, and the teacher asked the children to tell what they had had for breakfast. When it came the turn of a pupil who was usually cooperative, he refused to answer. Later in the day the teacher unobtrusively questioned him about his behavior. His answer succinctly revealed why he had protected himself by this adjustive means: "This mornin' I didn't have no breakfast and I don't eat what you was talkin' about." Educational psychology can offer much enlightenment on both direct and indirect adjustive processes of individuals and the meaning these have for teachers.

Ernest O. Melby has well summarized desirable disciplinary practice:

In a democratic society, the only effective discipline in the long run is self-discipline. . . . Serious offenses and destructive behavior were much more characteristic of schools a half century ago than today for the simple reason that little effort was made to make the learning process an interesting one. Teachers who are able to interest their children seldom have disciplinary difficulties. We make progress in disciplinary directions more by indirect methods than by actually attacking the disciplinary problem itself. Whenever we improve the curriculum, the teaching methods, the preparation of teachers, the quality of the equipment, and the adaptation of instruction to the needs of children, we make substantial inroads on disciplinary problems or ward them off entirely.⁴

INTERPERSONAL RELATIONS

There is a new frontier in educational psychology which is contributing much to the teacher in his work—the area of human relations. Teaching and learning, by definition, most often involve group situations and interpersonal relationships. Such relationships are increasingly the subject of psychological research, out of which is emerging a whole new understanding of the role of the teacher as a classroom leader.

The teacher-pupil relationship is a very important factor in school adjustment. In his first school experience the child most frequently sees the teacher as a parent substitute. He tends to transfer to the teacher his feelings about the parent. Later the child learns new roles for adults and assigns some of these to teachers. Thus each child

⁴ Melby, Ernest O., "Five Fallacies About Modern Education," *The New York Times Magazine* (November 27, 1955), pp. 13, 36-42. Quote from pp. 36 and 38.

comes to have his version or versions of a teacher. Likewise, the teacher has his own idea of what a teacher should be. How wholesomely these conceptions interact determines the morale in the classroom. It is basic to good morale that the teacher be aware that he plays a great many roles in the lives of the children—roles that the children assign—and he must be sufficiently mature to accept this situation. No teacher can avoid it, but he can learn to handle it as well as possible. Educational psychology offers insights to the improvement of teacher-pupil relationships, for as we more and more become aware of the emotional aspects of learning, we increasingly recognize the basic importance of these relationships.

We are also coming to realize the potency of both direct and indirect learning stemming from group life in the classroom. Good social adjustment within the peer group underpins many other areas of adjustment. Classes are now looked upon as groups of children rather than as collections of isolated individuals.⁵ Sociometric techniques enable the teacher to describe the social roles of pupils and to identify the subgroups within the class. Only limited research has been done on group and subgroup codes and traditions, but it shows that group psychological forces intensely influence the individuals involved. Psychological studies further indicate to the teacher the developmental stages at which each pattern of relationships comes into prominence and how he can be most effective in the group at each stage.

Teachers, too, must adjust to their colleagues and in their daily living. Psychology can offer suggestions to the teacher to foster better relationships for himself with other teachers, administrators, other school personnel, and in his life outside the school.

CURRICULUM

Society also has needs, which largely determine the “what” of the curriculum—those kinds of learning society considers essential for its well-socialized adults. Society, however, is being unrealistic and is destined for disappointment if its goals are incongruent with the development and potential of the individual learners. An effective curriculum must be psychologically based, taking into account devel-

⁵ A fine summarizing statement of current status is available in the article by Trow, W. C., A. E. Zander, W. C. Morse, and D. H. Jenkins, “Psychology of Group Behavior: The Class as a Group,” *Journal of Educational Psychology*, XLI, No. 6 (October, 1950), pp. 322–38.

opment, individual differences, motivation, values, and learning principles.⁶

The teacher, in striving to formulate a desirable curriculum, is essentially seeking answers to these basic questions: "What are the needs of the learner? What are the needs of society? What learning activities can best satisfy these needs?" Some learning activities may be very desirable at one level but undesirable at another. For example, the teachers in a certain school were about to include a unit on nutrition in the curriculum until one of them questioned whether this might arouse undue anxiety in young children, who usually have little to say about their diets. The pros and cons were discussed with the school psychologist, and the decision was reached to delay the topic until a higher grade. These students were "physically ready" to assimilate the learning, but the social and family situation hindered complete readiness.

A very lively question in curriculum-making in recent years has been what and how much should be taught about forms of government other than our own, and whether we can be "democratic" and not teach about them. Can educational psychology offer enlightenment on this question? Or on the countless others that determine the school activities? Any curriculum, to be genuinely functional, must have a sound psychological basis, and to this facet of the teacher's job educational psychology has much to contribute.

METHODS

The teacher is constantly confronted not only with the question of *what* to teach but also with the equally important question of *how* to teach. How can the learning activities best be organized? Will one method of guiding learning be more effective than another? All our knowledge about the learning process is relevant to this problem. We know it is impossible in a formal school situation to learn all one needs to know throughout life. Therefore, the essential issue is "transfer of learning"—to help the learner, through classroom experiences, acquire competency to deal with situations out of the classroom. How this can best be done is the theme of a major part of this book.

⁶ The major portion of an entire issue of *The Journal of Educational Psychology* is devoted to a detailed discussion of this topic. These seven articles are encompassed in "The Psychological Basis of the Modern Curriculum," *The Journal of Educational Psychology*, XXXIX, No. 3 (March, 1948), pp. 129-69.

Suffice it to say here that research and the principles derived therefrom point to understanding in school learning as the key. Transfer can occur only when an individual recognizes the new situation as similar to another for which he has an appropriate behavioral response. The problem of method thus becomes two-fold: (1) to introduce the necessary curriculum content with psychological appeal so that the learner, seeing many possible applications, will desire to learn; and (2) to aid him to bring his learning to a skill level, so that he may draw upon it whenever necessary. Educational psychology offers many principles of learning to aid the teacher in the choice of methods.

EVALUATION

Evaluation confirms or negates the learner's provisional tries. Both the learner and the teacher are constantly asking how well they are doing what they set out to do. Astute individuals will also ask why they succeed or fail, and how they might change or improve. These basic questions of evaluation involve measurement, a problem with which educational psychology has always been concerned. Although much evaluation in school is done by others, after the individual leaves school he must evaluate himself. A major concern of teaching, then, is to guide the individual in judging his progress independently.

Evaluation has far-reaching effects on behavior in that it influences motivation. Psychological concepts are inherent in all evaluation programs, whether in establishing the program or assessing its effects. Knowledge of educational psychology aids the teacher to judge more effectively not only the student's behavior in a learning situation but also his own effectiveness as a teacher.

EXPERIMENTATION

Educational psychology can aid the teacher in his own research. On many occasions, this may be quite informal, undertaken simply for personal satisfaction. Other research, on a larger scale and formalized, may serve to advance general theory. In either instance, educational psychology will define the steps to be taken in thinking scientifically about a problem. Knowledge of educational psychology may also disclose or create professional interest in problems previously ignored or unknown. Many times teachers are in a position to work on these problems more advantageously than anywhere else. Each new advance

in the science of psychology should lead to the recognition of new problems and possibilities in education and should suggest new areas of research. The great potentialities of such research are beginning to be realized, and groups of teachers have become increasingly involved in recent years in doing "action research." Teachers College of Columbia University has been especially active in promoting and directing this type of research. This is very desirable, for there are many hidden potentialities for the individual classroom teacher in day to day work. For example, a young teacher in an all-girl high school observed the avid interest of her ninth-grade office-practice class in reading love magazines. Finally, consumed with curiosity, she asked the group to write a class theme telling why they read them. The themes indicated that the girls read the magazines largely because "they tell us how to act." The unmet needs implied in this answer should be very revealing to anyone responsible for the school curriculum.

To summarize, the omnipresence of principles of educational psychology is revealed by its contributions to these seven general aspects of teaching: needs of learners, adjustment and discipline, interpersonal relations, curriculum, methods, evaluation, and experimentation. The science is indeed fundamental to the work of the teacher.

Organization and Plan of the Book

This book is designed to be an overview of educational psychology, organized to serve as a beneficial introduction to the student or novice teacher and as a fruitful synthesis to the more experienced. Subject matter is emphasized according to its value in teacher education. In a research study⁷ designed to determine the relative importance in teacher education of various topics in psychology, the jury (composed of 256 classroom teachers, supervisors, and administrators) rated highest those topics concerned with understanding of, and practical aspects of: the mental hygiene of pupil and teacher, personality development and adjustment, emotions, child development and the factors influencing individual growth and behavior, and efficiency in learning. These topics are embodied in the organizational plan of this book:

⁷ Luker, Arno H., "A Determination of Relative Value of Topics for Undergraduate Courses in Psychology for the Education of Teachers," *Journal of Educational Research*, XLIV, No. 9 (May, 1951), pp. 687-94.

1. Psychology in teaching
2. Human growth and development
3. Learning
4. Adjustment and mental hygiene
5. Evaluation and guidance

Educational psychology covers the entire range of behavior and personality as related to education. The study of human development and growth provides the student not only with facts, theory, and principles, but also with a healthy developmental point of view from which to understand behavior. Education is possible because human beings have the capacity to learn; the psychology of human learning is the central core of educational psychology. This subject takes for its province all information and techniques pertinent to a better understanding and a more efficient direction of the learning process. The objective of this book will be realized if it enables the reader to be an efficient learner himself and to direct the learning of others effectively.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • You are about to begin your first teaching position. List as many questions as you can which you would probably ask about teaching. Which of these do you think educational psychology might help you to answer? How?
- 2 • How do you think a knowledge of educational psychology may be of value to the college student, even though he does not aspire to be a teacher? What additional professional groups, other than teachers and prospective teachers, can you think of who might also find it beneficial? In what ways?
- 3 • Based on your observation and experience to date, what would you say are some practices in schools that are psychologically objectionable? Why? How might these be remedied? Keep this list and compare your answers with those you make to this question when you finish this book.
- 4 • "Learning is an active process." What can you do to make the study of educational psychology more profitable and practical to you?
- 5 • "The role of the teacher is to structure the environment to expedite learning." What can the instructor do to make the study of educational psychology more profitable and practical to you?

- 6 • What kind of classroom climate do you think would best facilitate learning activities? Give the reason for your answer.
- 7 • "Educational psychology is concerned with how people learn." What single topic involved do you believe is most important? Why did you select this one?
- 8 • Describe those you consider the poorest and best teachers you have ever had. What were crucial differences between them? How do you account for these differences? How scientific do you think your observations are? What may be pitfalls in the scientific validity of your observations?
- 9 • Name as many formally organized socializing agencies of our society as you can. Enumerate what you think to be their chief contributions to socialization. Do the same for informal socializing agencies.
- 10 • Which do you consider the most forceful socializing agency in your community? Why did you select this one?
- 11 • Using an area of the school program with which you are especially concerned, analyze the potential contribution it could make to the development of a well-socialized adult in our society. How well do you think it now accomplishes this?
- 12 • Do you think the influence of teachers or the school could have been more effective in your socialization to date? How?
- 13 • Why is an understanding of motivation and adjustment of such importance for the teacher?
- 14 • Why is it important that the teacher understand the psychology of individual differences?
- 15 • Interview a teacher about some of the practical problems of his work. Suggest possible ways in which these problems could be investigated by the scientific method. If possible, conduct a limited investigation of one of them.
- 16 • Observe a group of children in a formal situation and the same group in an informal situation. What differences in their behavior are apparent? What implications has this for the teacher?
- 17 • With a partner observe *simultaneously* but *independently* a child's behavior over three or four periods of approximately one half-hour each. Compare your notes. How do they agree and how do they differ? Which more accurately recorded what actually occurred? Repeat the process. Has your objectivity improved? What implications can you draw from this experience for teacher-preparation and for teachers?
- 18 • Plan to make a case-study of a child. What information do you wish to obtain? Check your list against a guide such as "A Framework

For Information About A Child" in *Helping Teachers Understand Children*. How can you obtain this information?

- 19 • How would you go about evaluating what you learned from this chapter?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Anderson, G. Lester, "Educational Psychology and Teacher Education," *The Journal of Educational Psychology*, XL, No. 5 (May, 1949), pp. 275-84.
- Annual Review of Psychology*. Stanford, California: Annual Reviews, Inc. Each yearbook includes a chapter on "Educational Psychology" in which research of that year is summarized.
- Bagley, W. C., "Teaching As a Fine Art," *Educational Method*, IX (May, 1930), pp. 456-61.
- Barker, R. G., and H. F. Wright, *One Boy's Day: A Specimen Record of Behavior*. New York: Harper & Bros., 1951.
- Blair, Glenn M., *Educational Psychology, Its Development and Present Status*. Urbana, Illinois: Bureau of Research and Service, College of Education, University of Illinois, 1948.
- , "Psychological Interpretation of Teaching," *Educational Administration and Supervision*, XXXIII (October, 1947), pp. 321-38.
- , "The Content of Educational Psychology," *The Journal of Educational Psychology*, XL, No. 5 (May, 1949), pp. 267-74.
- Brownell, W. A., "Learning Theory and Educational Practice," *Journal of Educational Research*, XLI (March, 1948), pp. 481-98.
- Bruce, William F., "The Relation of Educational Psychology With General Psychology," *The Journal of Educational Psychology*, XL, No. 5 (May, 1949), pp. 261-66.
- Burton, William H., *The Guidance of Learning Activities, A Summary of the Principles of Teaching Based Upon the Growth of the Learner*. Sec. Ed. New York: Appleton-Century-Crofts, 1952.
- Cassel, R. N., "Delincating the Areas of Educational and Clinical Psychology," *The Journal of Educational Psychology*, XLV (May, 1954), pp. 292-99.
- Davis, Robert A., "Applicability of Applications of Psychology with Particular Reference to Schoolroom Learning," *Journal of Educational Research*, XXXVII (September, 1943), pp. 19-30.
- "Educational Psychology for Teachers," *The Journal of Educational Psychology*, XLI, No. 6 (October, 1950), pp. 321-73. Six articles dealing with various aspects of the topic:
- Trow, William C. et al., "Psychology of Group Behavior; The Class as a Group."
- Cook, Walter W., "What Educational Measurement in the Education of Teachers?"
- Bruce, William F., "How Can the Psychology of Development in Infancy and Childhood Help Teachers?"

- Blair, Glenn M., "What Teachers Should Know About the Psychology of Adolescence."
- Anderson, G. Lester, "What the Psychology of Learning Has to Contribute to the Education of the Teacher."
- Freeman, Frank S., "The Study of Individual Differences in the Education of Teachers."
- Educational Psychology in Teacher Education*, Monograph No. 3 of National Society of College Teachers of Education. Ann Arbor, Michigan: The Society, 1953.
- Freeman, Frank S., "The Need to Define and Re-Orient Educational Psychology," *The Journal of Educational Psychology*, XL, No. 5 (May, 1949), pp. 257-60.
- French, Will, Ed., *Goals of General Education in High School*. New York: Russell Sage Foundation, 1957.
- Gage, N. I., George S. Leavitt, and George C. Stone, "Teachers' Understandings of Their Pupils and Pupils' Ratings of Their Teachers," *Psychological Monographs: General and Applied*, LXIX, No. 406 (1955).
- Haggard, E. A., "The Proper Concern of Educational Psychologists," *The American Psychologist*, IX, No. 9 (September, 1954), pp. 539-43.
- Havighurst, R. J., *Human Development and Education*. New York: Longmans, Green and Co., 1953.
- , and B. L. Newgarten, *Society and Education*, Boston: Allyn and Bacon, Inc., 1957.
- Jersild, A. T., *When Teachers Face Themselves*. New York: Bureau of Publications, Teachers College, Columbia University, 1955.
- , *In Search of Self*. New York: Bureau of Publications, Teachers College, Columbia University, 1952.
- Kearney, Nolan C., *Elementary School Objectives* (New York: Russell Sage Foundation, 1953). Also *Supplement to Elementary School Objectives*. Princeton, New Jersey: Educational Testing Service, 1953.
- Kilpatrick, W. H., "We Learn What We Live," *New York State Education*, XXXIII (April, 1946), pp. 535-37.
- Luker, Arno H., "A Determination of Relative Value of Topics for Undergraduate Courses in Psychology for the Education of Teachers," *Journal of Educational Research*, XLIV, No. 9 (May, 1951), pp. 687-94.
- Melby, Ernest O., "Five Fallacies About Modern Education," *The New York Times Magazine* (November 27, 1955), pp. 13, 36-42.
- Noll, Victor, et al., "The Function of the Division of Educational Psychology of the American Psychological Association: A Committee Report," *The Journal of Educational Psychology*, XL (October, 1949), pp. 361-70. Part I, "What Educational Psychology Is," covers pertinent topics.
- "The Psychological Basis of the Modern Curriculum," *The Journal of Educational Psychology*, XXXIX, No. 3 (March, 1948), pp. 129-69. Seven articles dealing with various aspects of the topic:

- Trow, William C., "How Educational Psychology and Child Development Can Contribute to the Preparation of Teachers."
- Anderson, G. Lester, "Theories of Behavior and Some Curriculum Issues."
- Cook, Walter W., "Individual Differences and Curriculum Practice."
- Wright, Herbert F., "How the Psychology of Motivation is Related to Curriculum Development."
- Bruce, William F., "How a Psychological Approach to Human Values Clarifies Educational Objectives."
- Blair, Glenn M., "How Learning Theory Is Related to Curriculum Organization."
- Freeman, Frank S., "How the Curriculum Is Evaluated and Modified Through Educational Measurement."
- Ojemann, R. H., "Research in Planned Learning Programs and the Science of Behavior," *Journal of Educational Research*, XLII (October, 1948), pp. 96-104.
- Priscott, Daniel (Ed.), *Helping Teachers Understand Children*. Washington, D.C.: American Council on Education, 1945.
- , *The Child in the Educative Process*. New York: McGraw-Hill Book Co., 1957.
- Rasey, Marie, *This Is Teaching*. New York: Harper & Bros., 1950.
- Redl, F., *Understanding Children's Behavior*. New York: Bureau of Publications, Teachers College, Columbia University, 1949.
- , and W. W. Wattenberg, *Mental Hygiene in Teaching*. New York: Harcourt, Brace and Co., 1951.
- "Selected References on Educational Psychology," an annotated bibliography published annually in May issue of *School Review*.
- Skinner, B. F., "The Science of Learning and the Art of Teaching," *Harvard Educational Review*, XXIV, No. 2 (Spring, 1954), pp. 86-97.
- Skinner, Charles E. (Ed.), *Educational Psychology*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951. See especially Chapter 1, "The Nature and Scope of Educational Psychology."
- Snygg, D., and A. Combs, *Individual Behavior: A New Frame of Reference for Psychology*. New York: Harper & Bros., 1949. See especially Chapter 10, "The Goals of Education," and Chapter 11, "The Task of the Teacher."
- Spalding, W. B., "New Challenge for Educational Psychology," *Journal of Teacher Education*, I (June, 1950), pp. 103-06.
- Symonds, Percival M., "What Education Has to Learn from Psychology," *Teachers College Record*, LVI, No. 5 (February, 1955), pp. 277-85. Also, "What Education Has to Learn from Psychology: II. Reward," *Teachers College Record*, LVII, No. 1 (October, 1955), pp. 15-25.
- Trow, William C., "Educational Psychology Charts A Course," *The Journal of Educational Psychology*, XL, No. 5 (May, 1949), pp. 285-94.
- , "Value Concept in Educational Psychology," *The Journal of Educational Psychology*, XLIV (December, 1953), pp. 449-62.

- , et al., "Psychology of Group Behavior: The Class as a Group," *The Journal of Educational Psychology*, XLI, No. 6 (October, 1950), pp. 322-38.
- Tyler, R. W., "Trends in Teaching; How Research Is Affecting Our Understanding of the Learning Process," *School Review*, LIX (May, 1951), pp. 263-72.

2

THE TEACHER AND HIS TASK

The Psychological Definition of Teaching

One of the most practical concepts for the prospective teacher to acquire is a correct notion of the objective realities of learning and teaching. Confusion with regard to basic learning processes and teaching techniques still persists in the minds of many in spite of the considerable amount of psychological experimentation that has been done upon problems of teaching. And though few psychologists today would be willing to define learning in terms of transfer of ideas, yet some pedagogical procedures imply this background. A considerable gap exists between the findings of the research laboratory and the practice that this research is calculated to modify—in the business and scientific worlds as well as the educational. For example, one of the most perplexing problems of manufacturing army and navy airplanes in time of war is the necessity of stopping assembly lines to incorporate new research discoveries. One of the purposes of specialized courses and texts in teaching technique is to acquaint the prospective teacher with recent research findings.

When we consider how psychology may be valuable in teaching, we can discern three major lines of influence. The first such line of influence may be termed the *directional* phase of teaching. If learning is viewed as the conditioning of the organism to progressive changes in the environment rather than as the transplantation of mental pictures, the directive function becomes all-important. From this point of view, the learner is going to be active regardless of teaching; learning does not begin when a teacher appears: it merely takes a different direction.

A second line of influence that teaching may take is *motivation*. Long before the time of the experimental psychology of motivation, common observation had taught men that they do well and vigorously that which they like to do. Modern pedagogy is inclined to the belief that pupils should enjoy what they are learning. The old doctrine that we get our best training from what we cordially dislike is no longer in repute. However, there are many things which we must learn to like, and, further, it is possible for a teacher to assist the pupil in learning to like them.

A third phase of the psychological influence of teaching is the possibility of the building of *attitudes* in pupils. An attitude is an emotionalized judgment, or an opinion which has become emotionally reinforced. The forming of a judgment involves data or knowledge and a technique of interpreting it.

Of the three phases of the psychological definition of teaching stated above, the development of attitudes is especially important. Dictators of this century have regimented not only labor and government, but education as well. The educational systems of the democracies are in question to determine whether, in a nation of nearly two hundred million people with dozens of practically autonomous educational systems, it is possible to secure national integrity of thought. The difficulty in securing this national integrity of thought and attitude is not so much philosophical as psychological. In a dictatorship, a small group of truly expert men can absolutely formulate the methods by which the attitudes are to be built and then enforce their formulation. In a democracy, especially one having a decentralized system of education, it depends far more upon the individual school system and teacher to devise the techniques. Consequently, even when there is considerable agreement on objectives, there are likely to be startlingly heterogeneous results owing to lack of uniform methods.

One other thing needs to be said about the psychological definition of teaching: psychology has much to offer in the determination of when subjects should be begun and the order in which their content should be presented. Recently there has been a renewal of interest in the topic of learning readiness and periods of optimum learning efficiency. Equally significant is the order of presentation of topics in any field. An examination of half a dozen standard textbooks on the same subject gives clear evidence of disagreement among author-

itics not only on what should be presented, but also on the order of its presentation. Mursell has given us a concise statement of the exact way in which psychology should serve in this area:

Psychology can give us insight into the problems of the order of learning. It is always possible to learn any subject in a great many different orders. One can start foreign language with the grammar, or with direct conversation, or in other ways as well. One can start geometry with axioms and postulates, or with experimental work in the use of pencil and paper, ruler, compass, and protractor. One can start science with the logical foundations of a special science, or with the wide range of information characteristic of general science. And if one goes beyond the beginnings of any subject, the number of variations in the possible order of topics is almost endless. Now it is very probable that there is no such thing in any field as a perfect or ideal order of topics and content. So what we may gain from psychology is not so much an endorsement of one particular sequence, as contrasted with all others, as insight into the fact that difficulties are created, and also removed, for the learner by certain orders and sequences of learning.¹

The Determination of Teaching Goals

One of the most perplexing and annoying problems of all education is the method to be used in determining curricular material. Unfortunately, the exact influence that clear knowledge of a goal has upon learning is not yet accurately measured. Purposive learning itself has not been defined by any set of generally accepted criteria. In an extensive and excellent discussion of learning as a purposive process, Mursell says:

The modern curriculum expert contends that children should be taught about the operations of municipal government because such insights will serve them as citizens. The psychologist recognizes the same principle from a different standpoint. On the basis of his understanding of the processes involved he insists that *the purposes for which anything is learned must always become apparent in the learning*. It is not enough to learn Latin without any conscious reference to anything else and then hope that it will improve English. It is not enough to study municipal government in a textbook without any conscious relatedness to surrounding conditions. Means must be recognized by the learner as means, or they cease to be means at all; and then we are acting directly contrary to the requirements of learning as a purposive process.²

¹ Mursell, J. L., *The Psychology of Secondary-School Teaching*, Rev. Ed. (New York: W. W. Norton & Co., 1939), pp. 17-18.

² Mursell, J. L., *Educational Psychology* (New York: W. W. Norton & Co., 1939), pp. 170-171.

Some educational psychologists would not go so far as Mursell in contending that everything that is learned must be understood from the purposive angle during the learning. There are situations in which it is virtually necessary to ask the learner to take on faith a delayed utilitarian value of the learning itself. However, it must be freely granted that in instances of this sort, unless there is some compensatory motivation, the efficiency of the learning itself is likely to suffer. Often a situation is materially helped by the borrowed motivation of a remote but strongly reinforced goal. The boy who is desirous of becoming a jet pilot may not, from an intellectual and rational viewpoint, comprehend the exact purpose of some of the things that he will be required to do in order to become a pilot, but the carrying force of the highly desired final objective offsets the temporary unrelatedness of what he is studying.

A moment's reflection reveals many situations in everyday life where learning takes place even though its exact purpose is not clearly understood. For example, when a novice is learning to drive an automobile, he is told to do certain things which he accepts on faith as correct. It is doubtful whether the majority of drivers thoroughly understand the results of their actions in driving a car beyond the general results of stirring the vehicle into motion and directing its progress. Where this ultimate motivation is lacking, or where the learner lacks faith in the relationship between what he is being asked to learn and some desired goal, learning suffers materially. The psychological implication, therefore, is quite clear. The teacher should do his utmost to make the goal evident when it is possible to do so, or, lacking means for that, to build up in the learner sufficient confidence to guarantee ready acceptance of the prescribed work.

Much intelligent effort has been expended in attempting to determine the general goals of learning in a democratic society. One of the best of these efforts is that described in the publication of the Educational Policies Commission.³ This committee finds four educational objectives in the democratic society:

1. The Objectives of Self-Realization
2. The Objectives of Human Relationship
3. The Objectives of Economic Efficiency
4. The Objectives of Civic Responsibility

³ Educational Policies Commission, *The Purposes of Education in American Democracy* (Washington, D.C.: National Education Association, 1938), p. 47.

Of these four paramount objectives listed by the Commission, it is readily discerned that the first two are definitely psychological; the third, economic; and the fourth, political. The Commission has gone further and worked out in detail some of the things necessary to the attainment of these objectives. These detailed statements are worth reproducing in order to complete the picture.

THE OBJECTIVES OF SELF-REALIZATION ⁴

The Inquiring Mind. The educated person has an appetite for learning.

Speech. The educated person can speak the mother tongue clearly.

Reading. The educated person reads the mother tongue efficiently.

Writing. The educated person writes the mother tongue effectively.

Number. The educated person solves his problems of counting and calculating.

Sight and Hearing. The educated person is skilled in listening and observing.

Health Knowledge. The educated person understands the basic facts concerning health and disease.

Health Habits. The educated person protects his own health and that of his dependents.

Public Health. The educated person works to improve the health of the community.

Recreation. The educated person is participant and spectator in many sports and other pastimes.

Intellectual Interests. The educated person has mental resources for the use of leisure.

Esthetic Interests. The educated person appreciates beauty.

Character. The educated person gives responsible direction to his own life.

THE OBJECTIVES OF HUMAN RELATIONSHIPS

Respect for Humanity. The educated person puts human relationships first.

Friendships. The educated person enjoys a rich, sincere, and varied social life.

Cooperation. The educated person works and plays with others.

Courtesy. The educated person observes the amenities of social behavior.

Appreciation of the Home. The educated person appreciates the family as a social institution.

Conservation of the Home. The educated person conserves family ideals.

⁴ *Ibid.*, pp. 50, 72, 90, and 108.

Homemaking. The educated person is skilled in homemaking.

Democracy in the Home. The educated person maintains democratic family relationships.

THE OBJECTIVES OF ECONOMIC EFFICIENCY

Work. The educated producer knows the satisfaction of good workmanship.

Occupational Information. The educated producer understands the requirements and opportunities for various jobs.

Occupational Choice. The educated producer has selected his occupation.

Occupational Efficiency. The educated producer succeeds in his chosen vocation.

Occupational Appreciation. The educated producer appreciates the social value of his work.

Personal Economics. The educated consumer plans the economics of his own life.

Consumer Judgment. The educated consumer develops standards for guiding his expenditures.

Efficiency in Buying. The educated consumer is an informed and skilful buyer.

Consumer Protection. The educated consumer takes appropriate measures to safeguard his interests.

THE OBJECTIVES OF CIVIC RESPONSIBILITY

Social Justice. The educated citizen is sensitive to the disparities of human circumstance.

Social Activity. The educated citizen acts to correct unsatisfactory conditions.

Social Understanding. The educated citizen seeks to understand social structures and social processes.

Critical Judgment. The educated citizen has defenses against propaganda.

Tolerance. The educated citizen respects honest differences of opinion.

Conservation. The educated citizen has a regard for the nation's resources.

Social Applications of Science. The educated citizen measures scientific advance by its contribution to the general welfare.

World Citizenship. The educated citizen is a cooperating member of the world community.

Law Observance. The educated citizen respects the law.

Economic Literacy. The educated citizen is economically literate.

Political Citizenship. The educated citizen accepts his civic duties.

Devotion to Democracy. The educated citizen acts upon an unswerving loyalty to democratic ideals.

Teaching as an Art

It is not at all uncommon to hear the expression, "Teachers are born, and not made." Those who use this misleading maxim would not for an instant dream of applying this partial truism to any other vocation. It is perfectly true that teachers are born, in the sense that some of the qualities characterizing a master teacher are partially hereditary in nature and, as such, depend upon birth. The inference most frequently drawn, however, is that, because teaching is a hereditary gift, no special technical training is needed for success in it, except, perhaps, mastery of the subject taught. Scientific experimentation is not needed to expose the childish fallacy of this superstition. Even in the field of pure art itself, such as music, hereditary talent requires the most careful tutelage to bring it to full fruition.

Born plumbers, without training, are not the people to repair broken water pipes; born engineers, without engineering courses, do not make the best bridges; born cooks may eventually learn to bake angel food cake by trial and error, but they produce plenty of failures in the meantime; born teachers, prepared only with a topheavy load of subject matter, are no better than untrained plumbers, unskilled engineers, and "by-guess-and-by-gosh" cooks.

However, the performance of the master teacher is decidedly puzzling to analyze, and at times it appears almost to be the exercise of some mystical power. In fact, the combination of intuition and adroit skill of a really fine teacher is a beautiful thing to behold. But this fine intuition is as much the result of planned training and intelligent experience as of natural aptitude. We see ample evidence of this fact when talented novices are doing practice teaching and, in spite of their natural aptitude, are making egregious errors. It is also interesting to note that those who undertake their practice teaching without the proper background of training, both academic and technical, do far less well than those who have had proper training.

Psychological Factors in Teaching Methods

A later section of this chapter will discuss the more personalized factors that enter into teaching success. Our purpose in this section is to consider certain general psychological phases of all teaching methods.

Psychologists have long been aware that mere knowledge is no guarantee of teaching success. Judd, for example, pointed this out many years ago in his excellent discussion of the psychology of secondary education:

What has been said with regard to these two simple forms of muscular adjustment can be repeated with regard to any one of the intellectual arts. For example, the teacher who knows a foreign language thoroughly is not, by virtue of that fact, the best-qualified teacher. Indeed, it has been found that in many instances a foreign teacher who comes to an American school with full possession of another language does not understand the difficulties which American children encounter in attempting to acquire this language. The foreigner is unaware of the various stages through which the American mind must pass in adopting strange idioms and forms of thought. An American teacher who does not have as full a mastery of a foreign language as has the foreigner is sometimes a better teacher by virtue of his experience with the difficulties that an American meets.⁵

Let us now consider the outstanding general psychological factors which go to make up successful teaching methods. The first of these is intelligence. Contrary to the opinion of many, teachers as a group, although superior to the general population in point of intelligence, are far from being in the upper flight of intelligence groups. Studies at both the high-school and the college levels show that in the matter of sheer natural brilliancy, many students are superior to their teachers. Even at the secondary level, where students are rather mature, a differential in favor of the teacher is not sufficient to secure academic classroom mastery. When we couple the only slightly better than average mentality of a large number of teachers with the fact that some teachers are teaching subjects for which they have slight preparation, it is easy to understand some of the common problems of American pedagogy. Of course, everyone familiar with the psychology of teaching is aware that more than intelligence enters into the picture. However, the fact cannot be lightly overlooked that a young teacher, of equal or slightly less natural brightness than his student, teaching a subject for which he has had little preparation, is in real danger of serious trouble. Looking at the matter from the positive side, it is difficult to state exactly what should be the minimum intelligence of people who are allowed to become teachers. Schools and colleges of education throughout the country have shown a decided tendency

⁵ Judd, C. H., *Psychology of Secondary Education* (Boston: Ginn & Co., 1927), p. 452.

to elevate the grade average necessary for acceptance into candidacy as teachers. This is roughly the equivalent of increasing the intelligence necessary, although the correlation between grades in college and intelligence is not particularly high. Probably we should do well to accept as candidates for teaching only those with an I.Q. of 120 or better. This figure does not rest upon exact experimental evidence, but rather upon a series of studies in various subject matter fields on the college level where the incidence of low grades becomes greater than that of high grades when the I.Q. of the learner is less than about 120. There is need for extensive research on the differential prediction of success in teaching in different fields and at different levels on the basis of a variety of objective tests and measurements. The problem of differential prediction in teaching is an especially complex one because of the need to identify the criteria of success in each of the special areas and levels of teaching, the large number of possible variables to quantify, and the period of time required to carry out such a program from the beginning of training to a relatively stable period of performance at the job of teaching.

Social competence is a vital psychological factor in teaching method. Social competence means far more than the mere ability to control children in the classroom. It implies an adequate adjustment to one's administrative superiors and to the community as well. So many of the modern teaching methods depend upon some form of socialized procedure that this trait in the teacher is not an optional but an indispensable one. A high level of social competence implies excellent emotional control or balance, a high degree of empathy, and practiced attention to the multitude of minimal cues upon which sophisticated adjustment to the social behavior of others is based. Some psychologists believe that underlying social competence are several hereditary factors in social intelligence. To the extent that hereditary factors contribute to social competence, we are dealing with native factors. However much people may differ in social intelligence, there is no doubt that social competence depends upon social intelligence plus considerable social experience. This experience is gained in part vicariously through professional courses designed to acquaint the prospective teacher with some of the situations that he will encounter. It is acquired on a more practical basis, also, in the practice teaching well-nigh universally required as a prerequisite to teaching certification.

Another psychological factor basic to sound teaching method is a highly developed *habit of observation*. According to Crow and Crow:

The teacher who is a keen observer is sensitive to the responses of each of his pupils. He thus is enabled to prevent the occurrence of incidents in the classroom that might interfere with the even tenor of the teaching-learning situation. Too often restlessness or lack of cooperation prevails in a classroom because the teacher either is unaware of the factors of maladjustment that are operative or is unconcerned about the attitudes and responses of individual pupils. It is the responsibility of a teacher to be well acquainted with the psychology of child behavior and to recognize not only undesirable overt behavior responses but also the underlying factors that provoke such behavior.⁶

This factor is further illustrated by the various types of study-hall teachers. A teacher who is in charge of a large study hall, usually held in a library or high school auditorium, has passing before his eyes a complicated and ever-changing panorama of action. Some teachers are blandly unaware of the multitude of violations of sound study habits. As long as the room does not break into a riot, the easy-going teacher seems satisfied. Often he, himself, is reading a book or writing letters, content if the room preserves the outward semblance of order. Other study-hall teachers—they are the superior ones—are keenly aware of every change in tempo of the group over which they have charge. They spot potential troublemakers and keep them under surveillance. Although it is very difficult to secure a reliable qualitative measure of comparison between the two types of teachers mentioned, no one with practical school experience doubts for a minute that far more studying is done under the latter type. A third type of study-hall teacher takes the opportunity of study-hall assignment to cultivate efficient study procedures on the part of pupils and works actively to create a “learning climate” in the study hall. Motivating pupils to develop study skills and to use time efficiently reduces materially the amount of dynamic supervision necessary.

The Psychological Factors in the Curriculum

It should be pointed out at the outset of a discussion of psychological factors in the curriculum that every teacher is a curriculum maker. All of the better school systems have numerous committees of teachers engaged in the continuous process of curriculum revision.

⁶ Crow, L. D., and A. Crow, *Educational Psychology* (New York: American Book Co., 1948), p. 24

The old psychological view of the curriculum was a "course of study" centered point of view. It presumed a fixed amount of material, usually determined by experts, which every child was expected to master. Later on, this view was slightly modified to allow for two or three pupil groups of varying ability, each of which mastered a rather rigid body of content.

The more modern psychological point of view of the curriculum centers on the individual child, holding that the curriculum should involve a varying amount of material for each child. The expert is not entirely out of the picture, but his work is supplemented by committees of teachers, to which reference has just been made, and often by reactions from the children themselves. The combined judgment of the experts and these other groups results in a basic curriculum around which, and in addition to which, each teacher must build an individualized curriculum suited to the needs of each child. This work places a far greater responsibility upon the individual teacher than did the older system which merely required the supervision of the child's mastering of a standardized body of subject matter selected by someone else.

Another important psychological factor of the modern curriculum is its provision for vitalizing and reinforcing learning. An example is very evident in the drastic effort currently being made to effect multiple sensory reinforcement of learning, resulting in the rise in audio-visual devices whose purpose is to enrich the educational program.

The Teaching Personality

Practically every modern study of teaching success has thrown emphasis upon the somewhat intangible factor of the personality of the teacher. Thanks to the efforts of numerous competent investigators, this factor becomes more tangible daily. With all due respect to the effort to measure personality objectively, the fact remains that some earlier students of teaching personality, like Palmer, came close to solving the entire problem on an observational and intuitional basis. It is not a bizarre expectation to look, in the near future, for prognostic tests of teaching ability that will correlate highly with later teaching success. In this section we shall consider briefly several of the outstanding factors that contribute to a successful teaching personality.

First, and by all odds most important, one must have a genuine affection for children. Young people and adults are quick to sense any fundamental lack of sympathy with their feelings, aspirations, and efforts. Contrary to the biased observations of some parents, it is not necessary to have had a dozen children in order to be a competent child psychologist or to have a genuine affection for young people, any more than it is necessary for the surgeon to have had his appendix out in order to perform a first-rate appendectomy. As a matter of cold fact, there are plenty of parents who do not love children and there are plenty of teachers who do.

Second in personality factors may be noted what has been called an "aptitude for vicariousness." This is simply the ability to put oneself in the other fellow's place. Affection does not guarantee it, although it is not very often found without affection. H. L. Mencken once said that it is necessary for one to have a "childlike" nature in order to be a successful teacher. This is about as accurate a statement of it as one could expect to find.

Third among the requisite factors of the master teacher's personality is emotional balance, mental health, or general temperamental stability. Many children are excitable—as, indeed, are all human beings, for that matter. A teacher who is in a condition of emotional imbalance or temperamental instability has a distinct tendency to promote exactly that type of response in her classes. In discussing this situation Davis writes:

In children we frequently find the reflection of the same desirable and undesirable emotional qualities which their teachers display. Teachers who are irritable, unfriendly, and careless are found to have pupils who manifest similar characteristics. Pupils who do their work in a businesslike manner, are considerate of the teacher, and who exhibit no fears in the classroom usually are found to have been associated with teachers who are calm, sympathetic, and stimulating. Social and emotional problems pass from individual to individual just as certainly as physical disease. One investigator suggests that the neurotic habits of a teacher may leave their effects as indelibly upon the child's personality as the ravages of smallpox. We are, therefore, justified in our concern about the relatively subtle effects of peculiarities in the teacher's personality upon children.⁷

Certainly lack of balance in the teacher makes for a condition of

⁷ From *Educational Psychology*, by R. A. Davis. Copyright, 1948. Courtesy of McGraw-Hill Book Co., pp. 163-164.

classroom uncertainty and instability that is a deterrent to concentrated effort and learning achievement.

Finally, an important asset for the teacher is a willingness to work at the tasks of teaching and to cooperate in the many enterprises associated with the school's total program. Teaching requires health and energy and the willingness to utilize one's time and energy freely on the job. The teacher who is skillful in continuous self-evaluation finds he has never mastered the art of teaching but must continuously put forth new effort in improvement of his teaching skills.

The Psychology of Discipline

The ability to handle classroom discipline successfully is a psychological factor basic in all teaching. As Sheviakov and Redl have pointed out:

One great task of the teacher, apparently, is to understand and accept principles of democratic discipline and to defend herself against the demoralizing lure of long outgrown and primitive punitivism which so successfully cloaks itself behind arguments of "toughness" and "realism." However, this is only one side of the picture. Let us not for a moment fall into the illusion that by understanding and accepting the principles of democratic discipline, we immediately move into a state of affairs where all problems are solved, or will disappear. This is not so. On the contrary, administering constructive discipline is a more laborious task than taking refuge in a few simple punitive tricks. It is just as much more laborious and challenging as is modern medical thinking compared to the proud hocus-pocus of the primitive medicine man.

The other great task, therefore, which confronts the classroom teacher on her job, is to translate the principles of democratic discipline into daily action in her classroom.⁸

No study of first-year teaching failures fails to name as a prominent factor in failure the inability to enforce discipline. Although the causes of disciplinary disorder are legion, and although it is impossible to state a single formula that will encompass all problems of discipline, nevertheless, there are certain general factors which have been carefully worked out and which every beginning teacher should know.

In the first place, a decision must be made as to whether or not punitive measures are ever in order. One school of thought maintains

⁸ Sheviakov, G. V., and F. Redl, *Discipline for Today's Children and Youth* (Washington, D.C.: Department of Supervision and Curriculum Development, National Education Association, 1944), p. 16.

that punitive discipline is never justified. Undoubtedly, not only is brutalizing a child a reprehensible practice, but it seldom leads to constructive results. On the other hand, one is setting himself a difficult task when he undertakes to control every type of child without any punishment whatever. The writer once taught in a school in which an incorrigible boy slapped the principal in the face because he knew that it was absolutely against the rules of the school for the teacher or the principal to touch a child. Happily, in the instance just mentioned, the principal was able to rise above his own rule and deal with the boy in language that he was able to understand. This discussion assumes that positive discipline is sometimes necessary and proceeds to consider the principles which underlie sound psychological disciplinary measures.

There are three or four basic rules of punishment which time and experience have shown to be sound. The first of these is that punishment should be not too far separated from the offense in point of time. All human beings have a tendency to rationalize their own conduct and to build up defenses for their own actions, even when those actions are definitely open to censure. When punishment occurs immediately after the offense while the offender has a definite sense of guilt, it is much more likely to be provocative of effective results than after a lengthy period in which the offender has had a chance to talk himself out of it. Second, punishment, if possible, should be related to the offense. The rationale of this is that when a situation similar to the one which called out the offending behavior recurs, it will serve as a cue not to further delinquent conduct but to the negative orientation produced by the punishment. Third, corrective measures should be in some sort of proportion to the delinquency itself. This is a highly important and often violated principle. Many parents, for example, in what perhaps may seem to them a commendable spirit of tolerance, endure numerous petty infractions of home discipline and admonitions, only to descend finally in wrath upon the child for a comparatively mild offense and punish him out of all proportion to the misbehavior. The child is not likely to appreciate the cumulative effect of his deviations from rectitude and is likely to feel much abused. Punitive discipline should be reserved for grave offenses and should be in proportion to them. Finally, discipline should be impersonally administered. Nothing produces hatred in a child so quickly as to feel that he is being punished to give an adult some personal

satisfaction. The "this hurts me worse than it does you" attitude should be acted out with all the seriousness possible.

Many parents and teachers are successful with some form of personalized control. Personal loyalty is an extremely potent factor in influencing all persons, especially children. It is probably unsound to condemn categorically personalized disciplinary control, but it is equally impossible to rate it as the highest type. For one thing, the mere factor of personalizing through factors of affection means that the child is likely to get the idea that he does not have to obey those whom he does not like. Probably the slower but more general and objective technique of disciplinary control through individual self-control or socialized control is better in the long run.

The legitimacy of sarcasm as a disciplinary instrument has been much discussed. Some authorities condemn sarcasm as a method without qualification. There is no doubt that sarcasm used in a sadistic fashion builds up ill-will and is productive of little positive value. However, in these days, when corporal punishment is becoming more and more rare, and hedged about by more and more legal restrictions, it may be that certain types of sarcasm adroitly used might serve to stimulate some types of exhibitionistic and lazy pupils. Sarcasm should not be used indiscriminately, particularly by the neophyte, but a little judicious experimentation in its use is worth a try.

Although student self-government has sometimes been criticized as a method of school discipline, its merits should be carefully considered. Schools which had plunged too hastily into elaborate plans of school government had to abandon them entirely. This result does not, however, change the fact that student participation in school government is being used successfully in many schools throughout the country. There is probably no better way to teach self-discipline. In those schools that failed to get satisfactory results, it was almost universally true that too much authority was turned over to the students too soon and without sufficient preparatory build-up. Few schools that have taken two or three years to introduce their systems of student participation in school government have had failures as a result.

Administrative and Community Relationships

One of the psychological adjustments that beginning teachers have difficulty in making is the adjustment to administration, supervision,

and community contact. Even many experienced teachers are likely to regard administration as a necessary evil that is more evil than necessary. Other teachers are inclined to the view that they are paid primarily to teach, and not to participate in community enterprises and the like. Some teachers regard supervision as some hypercritical supervisor's snooping effort to find fault. All of these warped points of view are a certain guarantee of maladjustment and difficulty. It is impossible to conceive of the elaborate educational machinery that we now have without thinking in terms of administrative machinery. It is equally impossible, in a closely knit modern society, to conceive of the teacher working apart from an intimate knowledge of the community.

The correct psychological attitude toward all of these situations is that of seeking help and welcoming it. The teacher who does not wait for supervision but goes and asks for it not only secures the good will of the supervisor but insures his own mental tranquillity as well. Administrators are more delighted by intelligent and voluntary collaboration than by almost any other single thing. As far as communities go, they all have interesting and unique customs, and seldom are these so completely at variance with the teacher's personal standard as to make adjustment impossible.

A Philosophy of Teaching

A quarter of a century ago, the majority of school administrators and school teachers would have been appalled had they been asked to state concisely the basic philosophy underlying their administration and teaching. As a matter of fact, even today standard discussions of school administration reveal precious little about the philosophy of the process. But modern techniques of survey and self-evaluation in school systems have had a tendency to throw a heavy emphasis upon the philosophy of the school. This trend may be regarded as one of the most healthy signs in modern school development.

In this period of successive and recurring world crises, it is absolutely necessary that schools throughout the country have some common understanding of the philosophy of democracy as a governmental ideology. There have been some excellent statements of the democratic philosophy in terms to which we can all heartily subscribe. One such statement, made by the Educational Policies Commission, has already been quoted in this chapter.

One particularly pernicious philosophy may well undermine the very foundations of American liberty. This is the theory of democracy that holds that, even after an absolutely free expression of opinion has been allowed, a minority has the right not only to criticize constructively, but actively to sabotage the program of the prevailing majority. Those who hold this point of view prate loudly of the Constitution and the Bill of Rights as their protectors, while they undermine a program which is the expressed will of the majority. The results of this type of democracy have been stated with clarity by André Maurois.

In 1937 an English professor of political science gave a lecture at the Sorbonne. He talked to four or five hundred students on the subject of parliamentary government, which his country originated and to which it has remained faithful. He said that this form of government is a curious compromise between the concept of struggle—natural to individuals—and the concept of unity—the neglect of which means the downfall of society.

A parliamentary democracy, he said, is a state in which the minority, after an election, agrees, for a fixed period of time, to be governed by the majority, and even during this period to collaborate with the leaders of the majority in all that is essential to the national existence. Naturally this attitude is possible only *when the minority is sure of being protected by certain fundamental principles which the majority also believes in*. In England these principles have grown up through long usage; in America they are codified in the Constitution; in all free nations they guarantee the minority against the abuse of power.

If the minority should lose confidence in the good faith of the majority, as far as fundamental principles are concerned, the change from one party to another—which is the essence of democracy—would no longer be possible. A minority which has strong reasons to fear the violence of the opposite party would not let, without a struggle, the police, the army, the finances of the nation fall into the hands of the majority. 'The reason why parliamentary government is almost completely successful in England is because of the general desire 'to make the thing work.' In England all parties, conservatives, liberals, and laborites, entertain and proclaim the same respect for fundamental liberties. Party conflicts are necessary to the existence and healthy condition of a self-governing country, but they must not be carried so far as to endanger the security of the State. . . . A house divided against itself cannot stand.'⁵

A type of democracy which allows dissatisfied minorities to run amuck is not democracy at all, but anarchy. Competent observers are agreed that it was this type of democracy that caused the cataclysmic

⁵ Maurois, A., "A House Divided Against Itself," *Harper's*, Vol. CLXXXII (February, 1941), p. 324. Quoted by permission of the author.

collapse of the French nation in May, 1940. True, the other extreme is scarcely less to be desired, and modern government is always steering between Scylla and Charybdis as it attempts to preserve individual liberty in a sphere which provides services for which a certain amount of regimentation is inevitable.

The schools should do everything within their power to combat the false democracy which has been described. Love of freedom we should inculcate. Respect for human personality we should assiduously cultivate. But along with these other things, we should teach the child the good sportsmanship which makes him a willing collaborator in a program that the majority have chosen.

Indoctrination on controversial issues is psychologically unwise. Particularly is this true in regard to peculiarities of the personal philosophies of an individual teacher. It is perhaps open to no criticism for a female teacher to be a man-hater if she was jilted when she was younger. But attempting to make man-haters out of all the girls coming under one's tutelage is a form of indoctrination not to be condoned. Equally true is this principle in the case of extreme points of view on politics, religion, race prejudice, and so forth. This statement is not inconsistent with what has already been said about democracy, because democracy is not a controversial issue in any real sense of the word in the governmental unit comprised in the United States of America.

Billett, in his excellent discussion of the fundamentals of secondary school teaching, points out the dangers of indoctrination in some of the modern methods of teaching, with the unit method as an illustration. He lays down some general principles for avoiding indoctrination which are well worth the consideration of every teacher. He says:

If the teacher employs the unit method in the light of the following principles . . . the pupils will have real freedom of thought and action and a genuine opportunity to exercise choice and to participate in the planning of their own activities, and the results will be the antithesis of indoctrination:

1. In stating the unit and delimiting it, the teacher should not anticipate, hope for, nor have any idea of trying to secure or insure uniformity of educative growth on the part of all pupils. He should seek only to identify some major learning product and some of its most important components in the form of capacities and tendencies to behavior which have meant to those who have possessed them greater

understanding and appreciation of the physical and social environment and more intelligent better-intentioned participation in that environment. In other words, the teacher should set up only tentative goals in terms of the educative growth of his pupils.

2. In planning the corresponding unit assignment the teacher should avoid recipes and statements of fact to be followed blindly or to be memorized by the pupils. The pupil should be guided with reasonable economy of his time and energy to a well-balanced sampling of all pertinent data and to different interpretations and points of view. He should meet challenging questions and problems. He should be compelled to think for himself—to hold all conclusions tentative.
3. Although each pupil should be provided with a mimeographed study and activity guide, the pupils should not be expected to engage in the same activities in the same way to the same extent.
 - a. Even in the core activities the pupil should be encouraged to exercise choice as to what he shall do, and how, and when, and where. During and immediately following the introductory phase of the teaching-learning cycle, each pupil should be encouraged to examine carefully the entire study and activity guide and, if desirable, to confer with the teacher concerning initial activities. Without the study and activity guide it would be physically impossible for the teacher to allow sufficient choice under reasonable guidance and direction.
 - b. Some pupils may even begin with some optional related activity. In this connection it is particularly important to note that, no matter how extensive the list of optional related activities prepared by the teacher may be, the list should be closed with an invitation to the pupil to suggest other related activities in which he (the pupil) would prefer to engage.
4. The educative growth actually made by any given pupil in the areas represented by the statement of the unit and its delimitation should be expected to be unique in some respects. What a pupil actually learns must depend in part on his aptitudes, abilities, interests, aims, and hence needs, and in part on the educative environment provided him or discovered through his own efforts.

If used by a teacher who does not subscribe to the above principles, or who does not take pains to see that the principles are operative in his courses, the unit method might be perverted easily into an instrument par excellence for indoctrination.¹⁰

The teacher's philosophy of teaching is based on a set of values. Society usually supports the teacher who promotes socially accepted values. These accepted values are reflected in statements of the aims of education and in the preparation of lessons. Goals should be made

¹⁰ R. O. Billett, *Fundamentals of Secondary-School Teaching*. Boston: Houghton Mifflin Company, 1940, pp. 604-605. Used by permission of the publishers.

clear to the pupils also in order that they may relate their learning to socially accepted aims and values. To learn effectively, pupils should know not only why the content of a subject or lesson is important, but also why it is necessary to learn that content. The teacher's philosophy is basic in determining what goes on in the classroom.

Teaching as Guidance

One of the recent trends in education is the increasing emphasis on the classroom teacher's role in guidance. The teacher, as well as the counselor, is concerned with the mental health of pupils and with their growth in ability to make adjustments to their problems. These adjustments require growth in self-understanding, skill in getting along with others as well as skill in subject-matter techniques, the ability to cope with mounting tensions and pressures in modern life, and the development of values as well as knowledge.

The process of pupil guidance is a continuous one, and sole responsibility cannot be delegated to a single individual in any school. The school counselor is a trained person especially equipped to help pupils effectively, either directly or as a coordinator of guidance activities. School administrators, counselors, teachers, community workers, and parents work most effectively as a team in the guidance of children and youth. Teachers trained in the observation and diagnosis of pupil behavior, in the direction of learning, and in evaluation of pupil progress can help both parents and pupils accept, adjust, and prepare to meet life's problems. The impact of the school program is in the long and continuous contact pupils have with teachers. Those teachers who comprehend the potential effect of their direction of pupil learning and their guidance of pupil personality growth and character development envision a more significant role of the teacher than that of an imparter of information or mere disciplinarian. The maximum realization of every pupil's potentialities is the goal of today's teacher.

The elementary teacher, as well as the secondary teacher with the guidance point of view, finds many opportunities within the classroom to help the pupil to grow in those understandings and skills which will be most useful in making not only a satisfactory but a satisfying adjustment to life. Recognition of pupil progress in important life processes is one of the stimulating rewards of teaching.

QUESTIONS AND EXERCISES FOR
DISCUSSION AND STUDY

- 1 • What are the three phases in the psychological definition of teaching?
- 2 • Summarize Mursell's discussion of the value of psychology in solving learning problems.
- 3 • Who, in your opinion, are the people who should be charged with the responsibility of determining teaching goals? Why?
- 4 • What are the four basic educational objectives in a democratic society, according to the Educational Policies Commission?
- 5 • Is it your opinion that teachers are born or that they are made?
- 6 • What are some of the reasons why knowledge is not in itself a guarantee of teaching success?
- 7 • Do you think it is desirable or otherwise that a teacher should be very much more brilliant mentally than his students?
- 8 • Discuss the modern point of view of the curriculum from the psychological angle.
- 9 • Name two or three traits, in addition to those given in the text, which go to make up a good teaching personality.
- 10 • Name the three basic rules of punishment. Decide whether you disagree with any of them, and, if so, why.
- 11 • Why are administrative and community relationships discussed in a treatment of the psychology of teaching?
- 12 • Discuss at some length the meaning of democracy in education.

SELECTED REFERENCES FOR FURTHER
READING AND STUDY

- American Educational Research Association, "Report of the Committee on the Criteria of Teaching Effectiveness," *Review of Educational Research*, XXII (June, 1952), pp. 238-63.
- Anderson, H. H. et al., *Studies of Teachers' Classroom Personalities, I and II*, Applied Psychology Monographs, Nos. 8 and 11. Washington, D.C.: American Psychological Association, 1946.
- Arbuckle, D. S. "The Classroom Teacher's Role in Guidance," *Review of Educational Research*, XXIV (April, 1954), pp. 181-89.
- Barr, A. S., "Measurement and Prediction of Teaching Efficiency: a Summary of Investigations," *Journal of Experimental Education*, XVI (June, 1948), pp. 203-83.
- , "The Measurement of Teacher Characteristics and Prediction of Teaching Efficiency," *Review of Educational Research*, XXII (June, 1952), pp. 169-74.

- Beaumont, Henry, and Freeman Glenn Macomber, *Psychological Factors in Education*. New York: McGraw-Hill Book Co., 1949.
- Billett, R. O., *Fundamentals of Secondary-School Teaching*. Boston: Houghton Mifflin, 1940.
- Bruce, Paul. "Reading the Effects on Behavior of Varied Classroom Environments," *Claremont College Reading Conference, Eighteenth Yearbook* (1953), pp. 32-56.
- Bush, Robert N., *The Teacher-Pupil Relationship*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954.
- Butler, Frank A., *The Improvement of Teaching in Secondary Schools*, Third Ed. Chicago: University of Chicago Press, 1954.
- Callis, R., "Change in Teacher-Pupil Attitudes Related to Training and Experience," *Educational and Psychological Measurement*, No. 4 (1950), pp. 718-27.
- Carlile, A. B., "Predicting Performance in the Teaching Profession," *Journal of Educational Research*, XLVII (May, 1954), pp. 641-68.
- Caruthers, T. L., "Discipline as a Means of Development," *Phi Delta Kappan* XXXV (December, 1953), pp. 137-39.
- Celler, Sidney L., "Practices Associated with Effective Discipline," *Journal of Experimental Education*, XIX (June, 1951), pp. 333-58.
- Childhood Education*. Issue on "Discipline," XXXI (February, 1955), pp. 258-75.
- Cole, L., *Teaching in the Elementary School*. New York: Farrar and Rinehart, 1939.
- Commission on Teacher Education, American Council on Education, *Teachers of Our Times*. Washington, D.C.: American Council on Education, 1944.
- Cook, W. W., and C. H. Leeds, "Measuring the Teaching Personality," *Educational and Psychological Measurement*, VII, No. 3 (1947), pp. 399-410.
- Davis, C. O., "Rewards of Teaching," *School and Society*, L (November 25, 1939), pp. 691-94.
- Domas, S. J., and D. V. Tiedman, "Teacher Competence: an Annotated Bibliography," *Journal of Experimental Education*, XIX (December, 1950), pp. 101-218.
- Educational Policies Commission, *Education for All American Youth*. Washington, D.C.: National Education Association, 1944.
- , *The Purposes of Education in American Democracy*. Washington, D.C.: National Education Association, 1938.
- Gough, H. G., and W. H. Pemberton, "Personality Characteristics Related to Success in Practice Teaching," *Journal of Applied Psychology*, XXXVI (October, 1952), pp. 307-9.
- Gould, George, and G. A. Yoakum, *The Teacher and His Work*. New York: The Ronald Press, 1954.
- Gragg, C. I., "Teachers Also Must Learn," *Harvard Educational Review*, X (January, 1940), pp. 30-47.

- Gray, W. H., *Psychology of Elementary School Subjects*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1938.
- Hampton, N. D., "An Analysis of Supervisory Ratings of Elementary Teachers Graduated from Iowa State Teachers College," *Journal of Experimental Education*, XX (December, 1951), pp. 179-215.
- Hymes, James L., *Behavior and Misbehavior: A Teacher's Guide to Action*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- Jensen, Alfred C., "Determining Critical Requirements for Teachers," *Journal of Experimental Education*, XX (September, 1951), pp. 79-85.
- Jackson, Joseph, "The Effect of Classroom Organization and Guidance Practice upon the Personality Adjustment and Academic Growth of Students," *Pedagogical Seminary and Journal of Genetic Psychology*, LXXXIII (September, 1953), pp. 159-70.
- Johnson, D. M., and H. C. Smith, "Democratic Leadership in the College Classroom," *Psychological Monographs*, LXVII, No. 1 (Whole No. 361). Washington, D.C.: American Psychological Association, 1953.
- Kilpatrick, W. H., *Art and Practice of Teaching*. New York: W. R. Scott, 1937.
- , *Philosophy of Education*. New York: The Macmillan Co., 1951.
- Lamke, T. A., "Personality and Teaching Success," *Journal of Experimental Education*, XX (December, 1951), pp. 217-59.
- Leeds, C. H., "A Scale for Measuring Teacher-Pupil Attitudes and Teacher-Pupil Rapport," *Psychological Monographs*, LXIV, No. 6 (Whole No. 312). Washington, D.C.: American Psychological Association, 1950.
- Michaelis, John U., "The Prediction of Success in Student Teaching from Personality and Attitude Inventories," *University of California Publications in Education*, XI, No. 6. Berkeley and Los Angeles: University of California Press, 1954, pp. 415-84.
- Monroe, Walter S., *Teaching-Learning Theory and Teacher Education, 1890-1950*. Urbana, Illinois: University of Illinois Press, 1952.
- Mowrer, O. H., "Discipline and Mental Health," *Harvard Educational Review*, XVII (October, 1947), pp. 284-96.
- Patey, H. C., and G. S. Stevenson, *The Mental Health Emphasis in Education*. New York: The National Committee for Mental Hygiene, 1935.
- Powers, F. F., and W. L. Uhl, *Psychological Principles of Education*. New York: D. Appleton-Century, 1933.
- Robinson, Clark, "Order Through Controlled Freedom," *National Education Association Journal*, XLIII (December, 1954), pp. 543-45.
- Rummel, Frances V., "What Are Good Teachers Like?" *School Life*, XXX (June, 1948), 4-9; (July, 1948), 7-11; *Education Digest*, XIV (November, 1948), pp. 1-5.
- Ryans, D. G., "A Study of the Extent of Association of Certain Professional and Personal Data with Judged Effectiveness of Teacher Behavior," *Journal of Experimental Education*, XX (September, 1951), pp. 67-77.

- , and Wandt, Edwin, "A Factor Analysis of Observed Teacher Behaviors in the Secondary School: A Study of Criterion Data," *Educational and Psychological Measurement*, XII (Winter, 1952), pp. 574-86.
- Sheviakov, G. V., and F. Redl, *Discipline for Today's Children and Youth*. Washington, D.C.: Department of Supervision and Curriculum Development, National Education Association, 1944.
- Simpson, R. H., *Improving Teaching-Learning Processes*. New York: Longmans, Green, 1953.
- Spears, H., *The Emerging High School Curriculum*. New York: American Book Co., 1948.
- Sylvester, H. D., and O. S. Niles, "Forgotten: Your Child's Individuality," *Educational Administration and Supervision*, XXXV (May, 1949), pp. 311-15.
- Symonds, P. M., "Characteristics of the Effective Teacher Based on Pupil Evaluation," *Journal of Experimental Education*, XXIII (June, 1955), pp. 289-310.
- , *The Dynamics of Parent-Child Relationships*. New York: Bureau of Publications, Teachers College, Columbia University, 1949.
- Thelen, Herbert, "The Experimental Method in Classroom Leadership," *Elementary School Journal*, LIII (October, 1952), pp. 76-85.
- Trow, W. C., "Value Concept in Educational Psychology," *Journal of Educational Psychology*, XLIV (December, 1953), pp. 449-62.
- Wandt, E., "The Measurement and Analysis of Teachers' Attitudes," *California Journal of Educational Research*, III (1952), pp. 10-13.
- Withall, John, "Assessment of the Social-Emotional Climates Experienced by a Group of Seventh-Graders as They Moved from Class to Class," *Educational and Psychological Measurement*, XII (Autumn, 1952), pp. 440-51.
- Witty, Paul A., "Evaluation of Studies of the Characteristics of the Effective Teacher," *Improving Educational Research*, Official Report of the American Educational Research Association (1948), pp. 198-204.
- , "Some Characteristics of the Effective Teacher," *Educational Administration and Supervision*, XXXVI (April, 1950), pp. 193-208.

PART



**HUMAN GROWTH AND
DEVELOPMENT**

3

GROWTH AND DEVELOPMENT

Some Basic Concepts

It is a truism to state that the ultimate goal in growth and development is the achievement of a well-adjusted, effective personality. To a degree as yet undetermined, the impetus toward this end is given in part by biological factors rooted in heredity. Those who are concerned with assisting young children and adolescents to approximate this goal, however, should never forget that whatever biological heredity contributes to growth and development is determined at the time of conception. That is, hereditary factors cannot be altered through any technique of social control and education brought to bear upon the child or the adolescent. Parents, teachers, and others concerned with the improvement of human beings must start with what has already been provided by the genetic constitution of the individual. The child is already here. The challenge, then, is to make the most of whatever has been furnished by heredity.

Two intrusive aspects of the individual stand out from the very start of post-natal life. First, the child is not a passive substance, to be molded by the environment. As any parent or teacher knows, the child is a dynamic organism, never at two successive moments quite the same. Each day effects alterations, for better or worse, in progress toward physical maturity and toward the enrichment of experience. Even on the relatively simple level of metabolic changes there is a continuous alteration in anabolic and katabolic changes. Bodily tissues are built up and torn down. To live is to change without cessation. Secondly, there is progress in development and growth. The changes do not take place on a horizontal plane alone. There are vertical changes as well. Of course, many retrogressions must be expected. The progress towards maturity is not steady. Just as the so-

called minor diseases of childhood may arrest progress in physical development, so may emotional turmoils, loss of the sense of security, and deprivation of affection thwart psychological development.

Students whose enthusiasms have led them to specialize in non-dynamic fields of inquiry are often frustrated by the apparent intangibility of such concepts as are implied in the foregoing paragraphs. They sometimes verbalize their wish that clear-cut definitions of certain absolute entities be given. They would like to know, for instance, precisely what is meant by *heredity*, *environment*, *maturity*, or *personality*. The truth is that all these terms, as well as most others that are used in educational psychology, must be conceptualized by reference to the total situations in which they are used. They have relative, not absolute, connotation. They must be defined operationally; that is, each term must be construed by reference to a total situation. One of these concepts cannot logically be isolated from the others. If one tries to do so, nothing but artificial debates arise, as, for example, the old argument about nature vs. nurture. Obviously, the growth processes involve an infinite complexity of interactions.

It is convenient, nevertheless, to ascribe rather definite connotations to two principal concepts. Admittedly, these definitions are given for pragmatic intents—they have some value in clarifying this discussion. The first one is *character*, a word that comes directly from classical Greek, originally denoting a die for making coins.¹ To prevent case of counterfeiting, each die was unique, different from anything else that might be manufactured. This old usage still continues into modern English. College students are sometimes tested for their knowledge of works of art, musical selections, or specimens of literature by their proficiency in detecting the unique style of a creative genius. One's character, defined by the history of the word, is all that makes him or her unique, different from every one else. Intonations of speech, gestures, manner of handwriting, physical appearance, patterns of interests—all these, and everything else that makes up individuality, are unique to each individual.

The second one is *personality*, a complex term with protean meanings.² Again for convenience, it is used to subsume all the factors.

¹ *Character* did not become invested with an ethical connotation until after the times of Immanuel Kant. Some careful writers prefer to use the term *ethical character* when referring to personality evaluated in terms of a moral code.

² For a readable, scholarly discussion of all the connotations of *personality*,

inherited and acquired, which make up the individual. For instructional purposes, knowledge is subdivided into separate branches. In a very real sense, however, all knowledge has a unity, and it is a product of human personality. Similarly, though for heuristic purposes the study of educational psychology is broken down into separate topics, it must not be forgotten that this field of inquiry deals basically with total, living human beings—children and adolescents. Each one is the end-result of an infinite variety of separate factors, many of which comprise important fields of human knowledge. All of them put together fail to clarify completely and satisfactorily all that parents and teachers might like to know about personality. Each of them, however, may contribute something towards a better understanding and appreciation of the total nature of the individual. The vexatious fact that so little is known about personality, its nature and its dynamic functions, is a challenge to psychologists and educators. Pending advances in human understanding, the student should be alert to avoid dogmatisms and fatalistic inferences.

Importance of the Subject

In 1774 Johann Bernhard Basedow founded an unusual school for children. Under a subsidy granted by Prince Leopold of Dessau, he was given an opportunity to put into practice many new theories in education.³ Hitherto young children were regarded as miniature adults. They were attired in clothing that differed from adult garments only in its sizes. They were considered to be capable of displaying all the motivations and the intellectual enthusiasms of adults. Basedow, greatly influenced by the writings of Rousseau, believed that children should be dressed in clothing that gave them freedom of movement. Brocade coats and gilt swords, then fashionable as attire for small boys, restricted their freedom. Long dresses and elaborate arrangements of the hair of small girls interfered with their activities. Basedow designed simple clothing that facilitated play and other forms of free expression. More than that, he planned a curriculum that would appeal to the natural interests, curiosities, and enthusiasms

as well as for a brief history of the term, consult *Personality: a Psychological Interpretation* by Gordon W. Allport (New York: Henry Holt and Co., 1937).

³ For a concise account of Basedow's contributions, and of other pioneers in educational reform, see Cubberley, E. P., *A Brief History of Education* (Boston: Houghton Mifflin Co., 1922), Chapter XXI.

of small children at various chronological ages. Actually, he was the first educator to attempt an organization of school activities graded to the successive levels of children's physical and mental development. His pupils were not required to sit quietly while the teacher drilled them in the lessons. On the contrary, he emphasized the type of learning which occurs through the natural activities of children. Through conversations, games, dramatizations, and reading material of immediate interest to children, he taught them languages. Similarly, in other subjects, he was a pioneer in principles of educational psychology that are now generally accepted.

The rise of modern points of view in biology, initiated by Charles Darwin's *Origin of the Species* (1859), accelerated interest in genetic studies of children.⁴ In particular, the founding of the British Association for Child Study (1895), together with the enthusiasm of G. Stanley Hall for research on growth and development of children, gave impetus and importance to this subject. Hall established the *Pedagogical Seminary* (1891) as a journal for publication of studies dealing with physical and psychological development of children. The doctrine of evolution, which had revolutionized the field of biology, encouraged observations and experiments in the area of child psychology. Biological and medical studies of growth and development of children supplemented and enriched facts and principles derived from psychological and educational research. Within the past 35 or 40 years the published reports of physical growth alone have assumed vast proportions.⁵ These have major implications for teachers. For instance, during the years when the average child is in public school, weight is practically tripled and height doubled.⁶ The subtleties of psychological development during these years are even more important, though still less well understood. As yet, facts and principles about growth and development are not clearly systematized for use

⁴ The emergence of new concepts regarding growth and development is traced in Gardner Murphy, *Historical Introduction to Modern Psychology* (New York: Harcourt, Brace and Co., 1949), Chapter 26.

⁵ See, for example, the summary of research on the adolescent by John Horrocks in Leonard Carmichael, (Ed.), *Manual of Child Psychology*, Second Ed. (New York: John Wiley and Sons, 1954), Chapter 11. For a review of the important literature on physical growth in childhood, consult Helen Thompson, *supra*, Chapter 5.

⁶ Referring to this topic as the "most neglected factor in education," S. L. Pressey and F. P. Robinson summarize important data in Chapter II, *Psychology and the New Education* (New York: Harper & Bros., 1944).

by teachers. Knowledge is developing at such a rapid rate that educational applications necessarily lag behind scientific understandings of the subject. Nonetheless, this subject is one of the most important and intrusive problems in education.

The Anecdotal Approach

Many data of utmost importance may be found in anecdotal records of the development of children. Faithful observations of the behavior of small children lead to the acquisition of some understandings that cannot be lightly dismissed. For example, *The Biography of a Baby* (1900), by Millicent Shinn, is a classic in its field.⁷ Though a bit sentimental at times, her account of the development of a child during its first year of life is a substantial contribution to the genetics of human psychology. The serious inquirer in the field of child psychology cannot afford to neglect biographies as sources of data.⁸ Of course, there are likely to be grave faults with anecdotal records. From a scientific point of view, these data are tantalizing and disappointing. Tales about home life, play activities, school experiences, and enthusiasms of young children are sometimes highly diverting and instructive. It is likely, however, that many of the observations are uncritically reported. Sources are unevaluated, and the teller is primarily concerned with producing an effect. Only a few dramatic highlights may be reported; hence anecdotal data lack continuity as well as impartiality. Control or comparative data are usually omitted, and thus the anecdote may lack perspective. Nevertheless, intensive clinical studies of a few small children, or even of one child, contribute to a better understanding of the genetics of human behavior. Reports of this type, especially when derived from valid scientific observations, now receive serious attention on the part of many qualified students of genetic psychology. Obviously, anecdotal data must be cautiously evaluated and verified.

⁷ This readable book (published by Houghton Mifflin Company, Boston, in 1900) is a popularized version of parts of her "Notes on the Development of a Child," *University of California Publications*, No. 1, 1893-1899.

⁸ For an illustration, see Amy Lowell, *John Keats* (Boston: Houghton Mifflin Co., 1925), Chapter I. Another example of biography at its best is Henry James, *Charles William Eliot* (Boston: Houghton Mifflin Co., 1930), Chapters I and II. Hints about what the student of human psychology might like to know regarding the emergence of a mature personality are found in Gardner Murphy, *Personality* (New York: Harper & Bros., 1947), pp. 22-26.

The Longitudinal Approach

One of the best ways in which to collect data about growth and development of children is through observations of a large group from their first days of postnatal life up to the time of maturity. An increasing number of observational records of this type are now available, particularly for the early years of life.⁹ This approach is by no means an easy one. Parents who have attempted to maintain records of the growth and development of their own children appreciate the difficulties of the longitudinal approach. Copious notes, photographic records, controlled observations, and diaries are familiar methods used by many parents. The accounts are filled with gaps in the genetic sequences. As the child grows older, much occurs "off-stage" as far as the observer is concerned. The impossibility of recording every item in the child's progress towards maturity is obvious. Samples of the child's development at intervals, even during a day, must necessarily omit many data which would be of importance in longitudinal studies. During the years when children are in school, elaborate cumulative records may be maintained. Marks in various courses, records of test results, specimens of work, notes of the development of interests and motivations, and shrewd observations of personal-social development are often maintained in permanent records of the school. Here, also, many significant items must elude the most vigilant teachers. Even the most complete genetic account is fragmentary.

An interesting problem in longitudinal approaches is to try to locate "psychological zero." This is the point at which growth and development begin. It is the moment when the child as a biological organism is first influenced by interaction with the environment. "Psychological zero" is a concept of more than theoretical interest. In the appraisal of intelligence, for instance, it has a practical significance. Much research has clearly established the fact that the newborn infant does not start at "zero." On the contrary, there are many unlearned responses and sensitivities. The repertory of all the physiological and the psychological capabilities of the newborn human being is long and impressive.¹⁰ It should be kept in mind that growth

⁹ Some of the best examples of pioneer work based upon this method may be located by consulting Wayne Dennis, "A Bibliography of Baby Biographies," *Child Development*, 7, (1936) pp. 71-73.

¹⁰ A convenient summary of these impressive data is to be found in George G. Thompson, *Child Psychology* (Boston: Houghton Mifflin Co., 1952), Chap.

from a single-cell organism to an infant who, at the end of a full-term pregnancy, weighs, on the average, about 6½ pounds and is about 21 inches tall, occurs before postnatal life begins. One of the minor classics in child psychology deals with the psychological status of young children about to start the first grade.¹¹ The important generalization from these intrusive facts is often overlooked in education: it is necessary to assume that there is never a "psychological zero" in growth and development. To each successive relationship to his environment the school child brings a considerable background of biological determinants and past experiences.

This point is of utmost importance in guiding the course of children's progress towards maturity. The first task is to ascertain the present level of development. Dependable norms are available for appraisals of physical growth, especially for very young children. These norms, of course, are to be understood as indicating average status. Individual children are likely to differ greatly from these statistically determined averages. Similarly, there are "readiness tests" which are helpful in discovering whether the child is at an appropriate level to start learning a given subject or activity. Longitudinal researches, sketchy and incomplete as they are at the present time, indicate that there is a "best time" for initiating various types of learning activities in the guidance of children. Presented too early in the course of the child's progress towards maturity, the subject may be far beyond the range of present competence. Not only is time wasted, but also serious emotional upsets may ensue. The appropriate organization of the curriculum, graded in terms of the child's growth and development, is one of the major tasks confronting educators. Even more important is the adjustment of methodology to the present level of the child's stage of development.

The Cross-Section Approach

Since it is utterly impossible to follow the child day and night,

ter 2. Compare modern scientific findings with the opinion of John Locke, who, in his tract entitled *Some Thoughts Concerning Education* (1693), said that at birth the mind is a blank page (*tabula rasa*).

¹¹ Hall, G. S., "The Contents of Children's Minds," *Pedagogical Seminary*, 1 (1891), pp. 139-173. The reference is important not only for its intrinsic values, but also for an example of the questionnaire method in genetic psychology, once the most popular investigative technique. See D. E. Bradbury, "The Contribution of the Child Study Movement in Child Psychology," *Psychological Bulletin*, 34 (1937), pp. 21-38.

controlling every phase of the observations and working up a complete record, educational psychologists make use of cross-section studies. Groups of children at successive ages are chosen for research.¹² All sorts of methods are then used to appraise their behavior and development. Experiments, observations, interviews, tests and measures, and time-samples are among the methods familiarly employed. In general, the findings from cross-sectional studies both confirm and supplement the data acquired by longitudinal studies of very small children. Cross-section research based upon studies of children in successive grades of the school are feasible and revealing. This method furnishes norms or standards for the expected stages of growth and development. Based upon representative samplings at each stage, these norms are useful and expedient as methods of appraising the progress of school children. It must be remembered that the sampling at each successive age is a new one and that the results are usually presented in the form of averages. Furthermore, it should be pointed out that cross-section studies deal with isolated variables as a rule. They do not attempt to appraise all the complexities in the life histories of individual children.

The Prediction of Individual Growth and Development

Both longitudinal and cross-section studies yield data that are of practical import in the school. On the one hand, they serve the purpose of facilitating evaluations of the status of the pupil at the present level of development. For instance, it is of major significance in teaching various operations in arithmetic to know what is the present achievement of individual pupils and of the class as a whole. Excellent tests are now available for measurements of this type.¹³ The performance may be expressed in terms of the average score attained by a valid sampling of pupils at various chronological ages and status in school grades. Reference to height-weight tables may be helpful in

¹² For a detailed account of this procedure, as well as of other methods, in studies of school children, see J. E. Anderson, "The Methods of Child Psychology," in Carl Murchison (Ed.), *A Handbook of Child Psychology*, Sec. Ed. (Worcester: Clark University Press, 1933), pp. 3-28.

¹³ See O. K. Buros, *The Fourth Mental Measurement Yearbook* (Highland, N.J.: Gryphon Press, 1953). Other yearbooks edited by Buros appeared in 1938, 1940, and 1949. Not only are various tests listed, but also there are comments upon their validity and reliability in these serviceable reference books.

determining the rate of physical growth.¹ These data are of immediate practical value. They serve helpfully in such "down-to-earth" activities as the designing of sizes of clothing and of schoolroom furniture. The more complex data are of value in appraisals of present levels of status in knowledge of the curriculum and of stages in personal-social development. Many of these data come from the observations of experienced, objective teachers. Having dealt with many successive generations of school children, they have a basis for making valid statements about the educational status of pupils. These shrewd observations, enriched by knowledge of the vast literature about growth and development, are of utmost importance for the young teacher-in-training. Customarily, this information is passed along during the days of practice teaching.

On the other hand, the results of cross-section and longitudinal studies furnish a basis upon which to predict the course of future growth and development. Within the limits of many errors, valid predictions may be made about school children. In the early days of mental testing, a fatalistic attitude was adopted by many persons concerned with education. Unfortunately, it was assumed that measurements of the status of children, particularly in the field of intelligence, point to the hopeless tasks confronting teachers. Such opinions are quite unjustified. The "father of intelligence testing" regarded these appraisals as attempts at the determination of status which require a considerable background in experimental psychology. Alfred Binet did not advocate a fatalistic point of view regarding the educability of school children. On the contrary, his appraisals were made in face-to-face meetings with individual children. Their performances on test items were interpreted in the light of the objective appraisals of an experienced observer. Differences in backgrounds of experience, the manner in which the test items are dealt with, the emotional security of the child, health status—these are a few of the considerations which must be taken into account if predictions are to have validity. Nevertheless, accurate, objective appraisals of the present status of the child do furnish a basis upon which to make tentative

¹⁴ For example, see B. T. Baldwin, "Weight-height-age Standards in Metric Units for American-born Children," *American Journal of Physical Anthropology*, 12 (1925), pp. 1-10. See also C. H. McCloy, "Appraising Physical Status: Methods and Norms," *State University of Iowa Studies in Child Welfare*, 15, No. 2 (1938).

predictions as to the course of subsequent progress towards maturity. For the young teacher the admonition is that so many errors are likely to occur in these appraisals, that the judgments should at all times be regarded as tentative and subject to revision. In other words, the role of the teacher differs from that of the impersonal research worker. Even the most retarded child must be regarded as a challenge.

Some Basic Principles of Growth and Development

Although there are many facts and principles of great importance to the student of child and adolescent psychology, attention must now be directed to a few items of practical import for educational work. In the first place, growth and development take place at orderly rates. Only for convenience do we speak of "stages" in these processes. Tabulated below are some of the conventional "stages" as they are customarily defined, but it must be remembered at no point is there a sharp break among them:

Prenatal stages:

Germinal—a fortnight after conception

Embryo—from the end of the second week to the sixth week

Fetus—the end of the sixth week until birth

Postnatal stages:

Parturate—from birth until the severance of the umbilical cord

Neonate—the first two to four weeks of life

Infant—first two years

Preschool child—from age two years to six years

Primary-school child—from six to nine years

Intermediate-school child—from nine to twelve years

Junior high-school pupil—from twelve to fifteen years of age, a period which normally includes the onset of puberty and initiates the stage of adolescence

Growth, though an orderly process, does take place more rapidly at some stages of pre-adult life than at others. Likewise, different parts of the body have their own rates of growth.¹⁵ Some tissues and

¹⁵ Many problems relating to the growth processes remain unsolved, though a vast amount of data is being accumulated. Evidently, the various organs and tissues of the body have differential growth rates. In many instances, the rate is fairly constant until maturity; in some, it proceeds in negative acceleration; and in a few, it is saltatory. The voice change in pubescent boys is a familiar example of saltatory growth of speech musculature and organs. The experts differ somewhat on details relating to this principle. Consult Leonard Carmichael (Ed.),

organs mature more rapidly than others. The principle of continuity of growth processes merely emphasizes the fact that there is no sudden transformation of the individual. Though the onset of puberty, with the emergence of secondary sexual characteristics, is a dramatic event in the life history of the person, the major lines of development are nevertheless continuous. At one time in the history of the school it was thought that a new type of curriculum was demanded to meet the unique physical and psychological characteristics of the adolescent. There used to be a marked hiatus between the elementary school and the high school, both in subject matter and in methodology. Now the transitions are conducted in a gradual fashion. Investigators who have plotted curves indicating the development of physical, mental, and social functions have been repeatedly impressed by the orderly, continuous nature of all the processes.¹⁶ From many data which have been gathered, it is possible to predict, within reasonable limits, the future growth of a child from careful measurements taken in early life. The value of mental tests, for instance, depends in part upon the fact that, since these processes are continuous during pre-adult years, a sampling of, say, the child's abilities at age seven will justify a tentative prediction about these abilities when the child reaches ten or twelve years of age.

Growth studies also indicate that neither heredity nor environment is the sole determinant. On the contrary, they interact throughout the entire process, and one can scarcely be separated from the other. Even at the simplest level of prenatal life there is an interaction between the cytoplasm of the original cell and the chromosomes. Once it was thought to be unequivocally established that the ultimate height to which a person might grow depended wholly upon inherited factors. Now that there are facilities for better pediatric care and improved knowledge of nutrition is available, the average height of a young adult in this country exceeds that of average grandparents by about an inch and a half. Of course, this simple fact does not indicate that eventually a race of giants may appear. It simply means that the inherited determiners of growth have a better chance to become operative.

Manual of Child Psychology, Sec. Ed. (Boston: Houghton Mifflin Co., 1954), Chapter 5, "Physical Growth" (by Helen Thompson), for an exhaustive and competent review of the literature pertaining to children.

¹⁶ For detailed exposition of this point, see Chapter 4.

Educational psychologists have a practical interest in the nature-nurture debate.¹⁷ If beyond the shadow of a doubt it might be proved that many children are incapable of profiting by secondary education, the taxpayers could be spared heavy assessments. If, on the other hand, it could be conclusively demonstrated that superior environmental opportunities improve the status of all children, then unlimited expenditures on mass education, from nursery school to the university, would be required. Scientific investigations of growth and development lend support to neither of these extreme positions. Although final answers have not yet been found, some of the knotty issues in the nature-nurture debate have been cleared away. It has been established beyond question that heredity sets limits beyond which growth and development cannot be forced. Similarly, it has been conclusively demonstrated that an impoverished environment and prolonged malnutrition or grave illnesses during the early years of life may arrest or impair the achievement of inherited potentialities.

Still another major principle of the growth and development processes is that they basically occur as a result of maturation and learning. Maturation may be crudely defined as the process of growing up. In school procedures the concept is customarily defined as a process by which readiness is developed in part. It alludes to the fact that at various levels of development children are capable of benefiting by instructions or practice in various functions. If children are assigned to tasks beyond their present levels of maturation, they may experience nothing but frustration and discouragement. A competent knowledge of simple fractions, to cite a homely example, presupposes a background of maturity and experience far beyond that of the average first-grade child. Reading readiness is one of the most important

¹⁷ Although, from the standpoint of modern science, the controversy is based upon an artificial dichotomy, the social-educational-political ramifications of these old arguments cannot be lightly dismissed. Consider, for instance, the issues involved in the Hamilton-Jefferson positions in the early history of this nation and decide whether these matters have been completely dismissed from the contemporary social setting. Arguments for hereditary-constitutional factors as predominant influences in growth and development are discussed, for instance, in W. H. Sheldon et alia, *Varieties of Delinquent Youth: an Introduction to Constitutional Psychiatry* (New York: Harper & Bros., 1949). Opposing views are to be found in W. A. Davis and R. J. Havighurst, *Father of the Man* (Boston: Houghton Mifflin Co., 1947).

examples of this general principle.¹⁸ The teaching of skills and understandings in the field of reading are basic to an acquisition of the curriculum. This work cannot be delayed until full maturity. Neither can it be successfully taught before the child is ready. Since the concept of reading readiness illustrates many of the complexities of educational problems, a brief discussion ensues.

As a result of growth and development, maturation and prior experiences, the child who is to learn to read must possess a number of characteristics. Chronological age may be a poor guide in the determination of reading readiness. The child must have reached a mental age at which simple relationships are understood, elementary ideas and perceptual patterns are easily learned and remembered, and so on (see Chapter 5). The child must have developed a sufficient level of frustration tolerance to put up with various difficulties until after efficient learning has occurred. A thorough medical examination must be administered to determine whether any sensory disabilities might impede learning or whether a condition of ill-health would contra-indicate membership in a normal classroom grouping. Indications of likelihood of successful adjustment to school routine, to other children, and to the teacher would be of importance in ascertaining readiness to learn to read. A wide variety of other factors would have to be taken into account in a complete appraisal of any child's readiness to learn any given subject in the curriculum or to participate in any other type of activity. Mental age alone is an inadequate criterion in forming these judgments. The subtle appraisals of levels of emotional-social-personality development, frustratingly difficult to achieve, are fully as important as the characteristics which may be objectively measured.¹⁹

¹⁸ In this connotation, readiness alludes to the child's background of experience, present level of maturation, emotional stability, and general physical-mental status which might be a guarantee of successful learning of some item, or items, in the curriculum. Most of the current research deals only with those conditions which seem to be necessary if the child is to learn to read in the first grade of school. Doubtless, continued research will define those conditions which guarantee successful learning in other subjects as well. The concept of readiness is much broader than that of biological maturation. It includes psychological and social maturity appropriate to the chronological age of the normal child at various levels of development.

¹⁹ The relatively new approaches through projective techniques represent a challenging amount of work. See L. E. Abt and Leopold Bellak, *Projective Psychology* (New York: Alfred A. Knopf, 1950).

Some generalizations concerning the growth and development process should now be considered. For example, at about one month of age the normal infant is able to lift the chin off the mattress when placed on its stomach. A month later it can lift its head and chest. By four months of age it can sit erect when the back is supported, and at seven months it can sit without support. By nine months of age it can stand up by holding on to a table leg, and at fourteen months it can stand without any support, and at fifteen months it can walk alone. In other words, even under widely differing environmental conditions a typical sequence in the development of motor patterns may be expected.²⁰ It is a type of development that receives primary impetus from biological factors. Affectionate encouragements from parents do nothing to hasten these sequences. Should the infant have inherited disabilities or prolonged illnesses, the course of development would be markedly slowed down. In many instances, the healthy, well-cared-for infant develops more rapidly. In any instance, however, "hothouse forcing methods" do nothing to facilitate the sequence of these patterns. Another example may be helpful in illustrating the concept of maturation or readiness. At about twenty-four weeks of age the infant may grasp a small block by making a looping movement of the arm and a primitive squeeze, but at one year of age the infant reaches for the block without resting the hand on the tray and with the thumb opposed to the first two fingers. Alterations in the figure of the adolescent girl, attainment of full stature, and the change in the voice of a post-pubescent boy are familiar examples of the processes of maturation.

It can scarcely be too often reiterated that these studies and observations are of importance to students of educational psychology. There seems to be an optimum age at which learning may be profitably undertaken for each gain the child is to make. Until the small child has developed the appropriate neuro-muscular coordinations, it is futile to attempt to teach the use of the spoon in eating. Parents seldom attempt to teach their children habits of eliminative control, the donning of their clothes, or helpful participations in the routine

²⁰ Shirley, M. M., *The First Two Years* (Minneapolis: University of Minnesota, 1933). See also A. L. Gesell, *Infancy and Human Growth* (New York: The Macmillan Co., 1939). For some principles of guidance in observations of early sequences, see A. L. Gesell, *The Embryology of Behavior* (New York: Harper & Bros., 1945).

of home management until after the children have reached appropriate levels of maturity. At the present time, educators are giving more attention to the problem of suitable placements of subject matter in the curriculum. It is obvious that, if subjects are misplaced in the curriculum, education is inefficient. Should the subjects be introduced too early, children are likely to become discouraged and emotionally upset. If, on the other hand, subjects are not introduced early enough, there is a loss of efficiency in achieving a challenge to progress. The work may be too easy, and, hence, there may be a reduction in the zeal to learn.

Is It Possible to Force Growth and Development?

Naturally, many parents are zealous to undertake any promising measures which might accelerate the growth and development of their children. Gains in weight, obviously, are associated with physical growth. The school health officials often maintain these records on individual children. Weight is a convenient measure of nutritional status. Correction of physical ailments and adherence to proper diet may effect desirable changes in the weights of school children. The use of tables of norms, however, requires caution. The bodily build, the height, and the age of each child must be taken into account when these tables are used. There is a wide variability in rates of development among children. These factors should be taken into account, and the appraisals of growth rates assume complex proportions. Expert medical counsel is required on these matters. Nevertheless, the dissemination of valid advice on matters of diet for children often depends upon the interest of teachers. It certainly is possible to conduct a program of health education in the school, and the results are beneficial. Growth is not forced through the applications of this knowledge. On the contrary, a favorable situation for normal growth is created. It must be noted that, in a sense, the school has now become the residuary legatee of society. Matters of personal hygiene, once left entirely to the home, have had to be assumed by the school. The diagnosis of health problems and the recommendations about steps to correct them now fall within the province of teachers and other school personnel. These measures, however, are far removed from "hothouse forcing methods."

The fact that improvement in physical status may be effected by corrective techniques leads to the hope that psychological maturation may also be accelerated. In a simple, ingenious little experiment a psychologist sought to teach a three-year-old boy the meaning of *opposition*.²¹ Patient instructions resulted in complete failure. The boy appeared to be incapable of comprehending the meaning of this abstract noun. With a child aged four-and-a-half years, the psychologist had a little success after a long, patient explanation and series of illustrations. When the same methods were used with a six-year-old, the meaning of *opposition* was readily understood. Apparently, those factors designated as maturation and readiness were involved here. They seem to be fully as operative in psychological growth and development as they are in the biological make-up. Not only should physical activities be selected after a full knowledge of the child's level of development, but also mental activities as well. To illustrate, it would be futile to try to instruct the average first-grade child to undertake art work with a fine-pointed brush. At this age the neuromuscular coordinations have not been developed. Similarly, it would be a waste of effort to try to teach Burke's famous *Speech on Conciliation with America* to students who lack a rich background in historical studies. Growth and development require time, and hence teachers and parents should exercise patience.

Another little experiment affords an example of the futility of "hot-house forcing." Two groups of kindergarten children were matched in chronological age, intelligence test scores, home background, and sex. Then they were given a set of digits to learn. Half the group were taught a method for conveniently memorizing the digits. As a result of this training, the group made some progress in efficiency. The other half were taught no ways of grouping the numbers or other methods for ease in this rote task. Temporarily, the coached group was just a bit superior. Following a long summer vacation, both groups were once again confronted with the task of digit

²¹ Dallenbach, K. M., and George Kreezer, "Learning the Relation of Opposition," *American Journal of Psychology*, XLI (1929), pp. 432-441. See also the studies by Jean Piaget, *The Child's Conception of Physical Casualty* (New York: Harcourt, Brace and Co., 1930); and *The Child's Conception of Number* (London: Routledge Company, 1952).

memorization.²² The advantage of coaching had been completely lost. Both groups were found equal in ability on this task.

Pertinent criticisms of the numerous experiments dealing with effects of coaching upon later performance should be noted here. Most of the experiments deal with short-term effects. Within the compass of a few weeks or months, one group is given special training in efficient performance. Then the achievement is compared to that of an uncoached group. As a rule, the materials for these experiments are remote from the normal interests of young children. Indeed, these are valid objections to some of the sweeping generalizations that have been drawn from these studies. The notion that we must "let nature take its course" is a superficial inference. The evidence is by no means conclusive. The beneficial effects of a stimulating environment, in which contemporary understandings about medical and psychological care of small children are carried out, must be advantageous. In fact, ample scientific evidence warrants this optimistic assumption. Furthermore, there is much unwarranted dogmatizing about the potency of "intrinsic factors" in physical and psychological development. The traditional, and fallacious, isolation of heredity from environment still persists in some quarters. The achievement of maturity is decidedly not a process of "unfolding" or the "working out of inherited factors" alone. It is the result of complex interactions from the simplest biochemical level on up to complex psychosocial levels.

Of course, these experiments do furnish a helpful point of view in child training and education. They indicate the importance of taking into consideration the maturational level of the child in curriculum planning and in establishing standards of evaluating outcomes. For instance, it has been demonstrated that children cannot learn to read easily, with present instructional methods, unless they have the maturity of the average child at age six and a half. Nevertheless, if better methods of teaching the subject were devised, it is conceivable that the "readiness age" might be pushed back six months or more.

²² Gates, A. I., and G. A. Taylor, "An Experimental Study of the Nature of Improvement Resulting from Practice in a Mental Function," *Journal of Educational Psychology*, 16 (1925), pp. 583-92. The futility of premature coaching is delightfully satirized by Charles Dickens in *Dombey and Son*, in which Doctor Blimber regards nature of no importance whatsoever and seeks to force "mental green peas" at all seasons, even from "mere shoots."

Not only is there a "right time" to initiate certain activities, but also there is a challenge to improve methods of instruction. Attempts to "teach" children skills and understandings before they are ready for the instructions, or by methods inappropriate to their maturity levels, result in total failure or in mere parrot-like repetitions. They do not result in genuine learning. On morning walks a father "taught" his four-year-old son to repeat the Greek alphabet. The outcome was nothing but a mechanical repetition. Sometimes over-ambitious parents inculcate a life-long distaste for academic learning by their unwise persistence in coaching their children to excel classmates.²³

On rare occasions, when it is necessary to build up self-confidence in a frustrated child, there may be justification for a little coaching. A degree of competence in a field of endeavor where there is little competition may enhance self-esteem. Thereafter, the child may attempt a course of action which will lead to realistic achievements. Unless genuine results accrue, however, the after-effects of coaching may soon be lost. For instance, a high-school boy practiced faithfully all summer vacation to become proficient in kicking goals. He sought aid from a college football player in the neighborhood. At the start of fall practice he excelled any member of the squad. With discouraging rapidity, however, several other boys outdid his level of performance, and he was assigned to a place on the bench all season. On the other hand, an unhappy little girl was coached in preparation for entrance into the fourth grade one fall. She worked hard at her piano lessons, and acquired a few skills in other activities which might bring favorable attentions from classmates and the teacher. The outcomes were favorable. Successes in the classroom, participations in assemblies, and approval from classmates compensated for her rejective stepfather and her lack of affectionate responses from a busy mother. On these matters the judgment of experienced, well-adjusted teachers is the best guide.

Teachers of physical education realize the importance of adjusting games and exercises to the maturational level of the pupil. Strenuous activities, such as distance running and football, are likely to be harmful if undertaken too early in the life-span. Sports writers often apply the expressive term "a burned-out athlete" to designate the boy who

²³ Thompson, G. G., and S. L. Witryol, "Adult Recall of Unpleasant Experiences during Three Periods of Childhood," *Journal of Genetic Psychology*, 72 (1948), pp. 111-23.

overexerted himself in competitive sports before he was sufficiently mature to endure the strain. The psychological effects of premature participations in competitive athletics have yet to be investigated. Newspaper publicity may give a "build-up" to a young athlete who, in mediocre competition, seems to be outstanding. Later, when competing with players who are more skilful than he, serious personality difficulties may be developed. Through no fault of his own, he may have acquired an unjustified amount of self-esteem as a result of newspaper exploitation. When competing for a position on a college team, he discovers that his abilities are little more than average. Young persons who have been given superior advantages in music education, similarly, may be over-estimated by local critics. A young woman, for example, had had the advantages of many years of instruction on the piano. As a result of her special coaching, she excelled other performers in her community. A debut in Carnegie Hall brought unfavorable reviews, and she was faced by a grave necessity to alter radically all her plans for a career. Fortunately, she was able to effect a happy adjustment to the fact that for her music could be nothing more than a way of entertaining friends and a means of self-expression.

To what extent a scientifically planned educational program, from nursery school to college, might contribute to the growth-development processes is a question still unanswered. The proper grading of subject matter and activities, a task initiated by Basedow two centuries ago, requires much additional research. Methods of instruction are by no means perfected. Challenging problems await solution. There are many reasons why parents and educators are justified in a hopeful outlook. One of the most obvious reasons is found in the fact that children from privileged socio-economic classes tend to achieve more in school work, make higher scores in measures of intelligence, and rate at better-than-average status on medical tests than do children whose parents are on a marginal standard of living. If all children had good medical care from birth, had diets justified by modern knowledge of nutrition, and were members of well-adjusted families, norms for growth and development would have to be raised. Likewise, if all children were offered the educational opportunities now found only in the most enlightened communities, school achievements would far excel present outcomes. Even in the United States of America these ideals have not been achieved. Many children are faced

by limiting circumstances that thwart the possibility of wholesome development. The challenge lies in the fact that very few of these limitations are unalterable. Lack of a social conscience, not an inexorable "Mother Nature," is the chief impediment to progress in child welfare.

Mental Development

In the early years of life it is practically impossible to draw a line of demarcation between mental and physical development. As a general rule, the rate of progress in physical development is the best index to growth in psychological functions. There is, however, one major difference between physical and psychological development. Whereas biological factors are the principal determinants in physical development, the environment plays a major role in psychological development. One of the most convenient indices to the rate of psychological development in the small child is the rate at which the vernacular is mastered. Starting with primitive vocalizations, the young child gradually acquires facility in making recognizable speech sounds. Much study has been devoted to establishing norms for various age levels in language development.²⁴ The average infant makes a recognizable speech sound at about ten months of age. By 18 months of age he has acquired about 22 words. Four years later the average child has a vocabulary of more than 1,800 words. Not only does speaking vocabulary increase with positive acceleration, but also clearness of articulation and differentiations among the meanings of words indicate mental development. Similarly, the child's progress in making words into sentences is a useful index to the rate of psychological development. Objective evaluations of language development, therefore, are useful complements for appraisals based upon normative summaries of the physical development of young children.

By the time of the fourth or the fifth grade, the close interconnection between biological and psychological aspects of development becomes blurred. It is increasingly difficult to discern any relationships between the rate of physical development, the achievement of coordinations, and the maturing of bodily structures, on the one hand, and the rate of growth in experience and understandings, on the other

²⁴ For an example, see M. K. Smith, "Measurement of the Size of General English Vocabulary through the Elementary Grades and High School," *Genetic Psychology Monographs*, 24 (1941), pp. 311-45.

hand. No doubt, the factors influencing biological maturation remain potent until a much later age than ten or eleven. Nevertheless, in the growth and development of the normal school child, environmental influences become more intrusive and obvious. For these reasons, therefore, more attention is paid to the enrichment of experiences, both in and out of school, for older pupils. It is assumed that there will be a concern for all matters that affect the physical health of school children. With the older child, however, it becomes increasingly important to direct attention to psychological development. For convenience, therefore, it may be useful to separate progress in the acquisition of skills, understandings, adjustments to other persons, and social-ethical orientations from physical growth.

The possibilities of improving the race through a sane program of community welfare, public education, and extension of opportunities for the hitherto underprivileged are of importance to educators. They justify the expedient distinction between "physical" and "psychological" growth and development. The major determinants of physical growth and development, as well as of other biological characteristics, were established before the school had a chance to be of any influence with the child. Through the school, helpful, valid information may be disseminated about these matters. The point is, however, that the heredity of boys and girls was set before they entered the school. If, therefore, the school is to be an effective institution, it must accept the pupils as they are, and then seek to raise them to the highest possible level of maturity. Consequently, the emphasis is upon growth in experience, in social competence, and in ethical character. The practical task and the social responsibility confronting teachers are obvious. The school is one of the major institutions of society that is concerned with the improvement of human beings through environmental means. To support the conclusion that much good may be accomplished through this program, many lines of evidence are now available. To justify the opinion that some of the hopes are unrealistic, other data are available. These data, however, may lead to pessimistic, fatalistic attitudes on the part of teachers and other persons engaged in humanitarian endeavor.

SOME PRINCIPLES APPLICABLE TO EDUCATIONAL WORK

Many of the investigations dealing with growth and development

of children are not of immediate importance for the teacher. Some of the best scientific work in genetics has been done on maize and fruit-flies. In the field of human psychology, the most thorough genetic work deals with infants and children of preschool age. Valid knowledge of growth and development which occur during the years covered by school programs is still very incomplete. Promising starts have been made to extend this knowledge. Much remains to be done at this time. Generalizations, therefore, must be broadly interpreted. They must be construed as nothing more than tentative judgments and recommendations. All such generalizations which are cited below must be interpreted as statements which have more or less factual evidence to support them. Each of them appears to have a direct and practical bearing upon educational procedures.

1. Growth and development are dependent upon both heredity and environment. The evidence now available is insufficient to warrant dogmatic statements on the extent to which one of these variables is more important than the other.²⁵
2. The school has a responsibility for achieving the best possible results with boys and girls entrusted to its care. Therefore, the abstract problem of heredity versus environment is of more concern to a biologist than to an educator. An effective teacher must be an "environmentalist," at least while in the role of an educator.
3. During the earliest years of life, physical development and the rate of progress in ability to learn are closely related. Maturation seems to be the important consideration in the placement of various items in the curriculum and in determining the nature of recreational activities. For instance, very seldom is a pupil able to write a "copy-book style" before age ten. Strenuous athletic activities, such as long distance running, necessitate complete, or nearly complete, physical maturity. Attempts to hasten the process of maturation seem to be futile, if not harmful.
4. In upper elementary grades and in high school, the complexities of prior experiences become more and more important. Many of the general principles derived from research studies on physical growth seem to be applicable to psychological development. The rate of progress is often disappointingly slow. At least, it may seem to be slow from the point of view of impatient adults who lack an understanding of basic principles in growth and development of school

²⁵ An interesting report may illuminate a discussion of this point: Wayne Dennis, "Does Culture Appreciably Affect Patterns of Infant Behavior?" *Journal of Social Psychology*, 12 (1940), pp. 305-317. For an important account of the complex interactions between biological and psychosocial influences, see E. H. Erikson, *Childhood and Society* (New York: W. W. Norton, 1950).

children. Not only are there differential rates of progress towards adult competence in experience, but also in any group of pupils a wide grade-overlapping in achievement is to be expected.²⁶

5. The developmental processes are not marked off by well-defined stages, with each period in the pupil's life history sharply demarcated from others. For instance, there is no support for the opinion that upper-elementary pupils are incapable of reasoning, and that, consequently, their curriculum should involve nothing but memory work. At all ages children are capable of reasoning within the limits of their background of experience and level of maturity. There may be spurts in growth and development; but measurement techniques have not revealed many of them, with the single exception of a tendency to gain in height during early years of adolescence.
6. During the years of junior high school, girls often appear to be somewhat more mature socially than do boys. As a concomitant of an earlier onset of puberty, girls may enjoy a temporary advantage in gaining the favor of teachers who over-emphasize "good deportment" in school. Many of the psychosocial differences between boys and girls at this educational level are attributable to cultural, not biological, influences. Much tact and understanding are required from teachers at the junior high-school level.
7. In seeking to guide the pupil in mental development, educators have to be concerned with the factors of motivation, interest in self-improvement, and zeal to learn. Experiences with well-deserved successes in a graded curriculum are a challenge to progress further. Constant defeats give rise to frustrations and discouragements. It must be remembered that children lack the psychological resources of adults in dealing with failures. The older person may be able to rationalize his deficits and disappointments. Children are unable to do so. They may rebel against frustrating circumstances or accept the role of the defeated pupil. Pseudo-successes are of no value in genuine progress towards psychological maturity. Real achievements, on the other

²⁶ In E. L. Cornell, "The Variability of Children of Different Ages and Its Relation to School Classification and Grouping," *Educational Research Studies*, No. 1 (Albany: University of the State of New York, 1937) a grade range among seven-year-old pupils of six grades is reported. The author found ten-year-olds to range in measured achievement from standard second-grade to standard ninth-grade performance. Variability within one person's range of performances is easily demonstrated by a study of contestants in "all-around" track and field competitions. In national competition no athlete ever wins in each event, although, of course, the average score in all performances determines the Amateur Athletic Association of America champion each year. The results are applicable to school children. No child would be expected to be "all-around" good, average, or handicapped in all characteristics, physical and psychological. The immediate educational application of this principle suggests that an assets-liabilities appraisal be made. The next step would be that of encouraging the development of potential assets and of seeing whether handicaps might be overcome or palliated through the aid of teachers.

hand, encourage the pupil to evince "readiness" for more difficult tasks. The extent to which qualified teachers and a program of well-financed education may raise the present norms for psychological growth and development has not yet been demonstrated.²⁷ Neither has there been a program anywhere in the world to discover what are the potential limits for physical growth if all children benefited by contemporary understandings of medicine and nutrition.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Look up a few eminent persons in standard biographies and find out how complete are the records of their ancestries, preschool experiences, and schoolings. Estimate the dependability of these data about them. Exactly what other data would be essential if one were to write a complete case history of their early lives? Why would these supplemental data be helpful?
- 2 • What is the difference between a biography and a case history? Which has the greater interest for a general reader? Report on the factual data regarding "Ann L.," a study of a nonsocial girl whose case history is reviewed by J. P. Kahn in Gardner Murphy and A. J. Bachrach, *Outline of Abnormal Psychology* (New York: Modern Library, 1954), pp. 79-105. What are some of the major difficulties you would encounter in writing, say, a case history of yourself?
- 3 • If possible, visit a playground and observe the activities of children of various ages. Try to discover significant differences in their behavior, topics of conversation, size of groups, and interests. What sort of check-lists do you find it necessary to construct in order to make systematic observations? How is an untrained adult observer of children at play likely to misinterpret their behavior at different ages? Is it obvious that the "psychological worlds" of children differ at various ages? Illustrate from observations of children.

²⁷ A dramatic account of the manner in which practically every facet of personality may be altered by reason of changed environmental circumstances has been given by Ralph Linton, "The Tanala of Madagascar," in Abraham Kardner, *The Individual and His Society* (New York: Columbia University Press, 1939), Chapter VII. A timely review of the effects an altered environment may have upon personality is to be found in Richard L. Walker, *China Under Communism* (New Haven: Yale University Press, 1955). A standard reference in discussions of the potentially great effects of social traditions upon individual behavior is Margaret Mead, *Sex and Temperament in Three Primitive Societies* (New York: William Morrow and Co., 1935). Ruth Benedict's *Patterns of Culture* (Boston: Houghton Mifflin Co., 1934) presents a strong case for environmentalism. Such books do necessitate a reconsideration of traditional dogmas about the hereditary determination of human beings, the so-called uneducability of the masses, and a fatalistic attitude towards the possible outcomes of education for all.

- 4 • Do abnormalities in growth rates and physical status cause embarrassment to small children? How are smaller children handicapped on account of their size when in play groups including older children? Do certain handicaps impose particularly trying frustrations at some periods of development? How do small children try to compensate for handicaps?
- 5 • Can you recall some items in the school curriculum that were especially hard to understand when you first encountered them, but which later on seemed to be very easy to grasp? Should the curriculum be organized entirely upon applications of the principle of readiness? How is the method of instruction also an important factor in this connection? Explain in detail.
- 6 • What is the difference between trying to force growth and development on the one hand, and, on the other hand, attempting to establish the most favorable environment to stimulate the child? Review the evidence to indicate that an impoverished environment may retard psychological development. See for instance, Leonard Carmichael (Ed.), *Manual of Child Psychology, Second Edition* (Boston: Houghton Mifflin Co., 1954), pp. 584-98).
- 7 • Illustrate from personal experience the results of repeated failures upon your zeal to proceed in the effort to acquire a skill. Did failures spur you on to redoubled determination to gain eventual success? What is the relationship between chronological age and the ability to endure failures?
- 8 • Are there circumstances which may stunt the psychological development of children? Define some of them from your own experiences. Are there circumstances which might stunt the physical growth of a small child? What could they be?
- 9 • Suppose that one take the extreme point of view about the all-importance of hereditary factors in child growth and development; what would be the social outcomes of this view? How would it affect educational policies in your community? Can you discover plausible reasons for taking such a view? See H. H. Goddard, *The Kallikak Family* (New York: The Macmillan Co., 1912).
- 10 • What would be the social consequences of the view that environment, not biological heredity, is all-important in the growth and development of children? If you believe that this view is foolishly optimistic, find evidence for your stand. What is a "middle-of-the-road" solution for this old problem? Explain clearly.

SELECTED REFERENCES FOR FURTHER READING AND STUDY

Breckenridge, M. E., and E. L. Vincent, *Child Development*, Rev. Ed. Philadelphia: W. B. Saunders Company, 1949.

- Burton, Wm. H., et al. *Readings in Child Development*. Indianapolis: Bobbs-Merrill, 1956.
- Carmichael, Leonard (Ed.), *Manual of Child Psychology*, Sec. Ed. New York: John Wiley and Sons, 1954.
- Dennis, W. (Ed.), *Readings in Child Psychology*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- Garrison, Karl C., *Psychology of Adolescence*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1956.
- Gates, A. I., "The Nature and Limit of Improvement Due to Training." *Twenty-seventh Yearbook of the National Society for the Study of Education*. Bloomington, Ill.: Public School Publishing Company, 1928.
- , et al., *Educational Psychology*, Third Ed. New York: The Macmillan Co., 1948.
- Gesell, Arnold, and F. L. Ilg, *Infant and Child in the Culture of Today*. New York: Harper & Bros., 1943.
- Jersild, A. T., et al., *Child Development and the Curriculum*. New York: Teachers College Publications, 1946.
- Martin, W. E., and C. B. Stendler (Eds.), *Readings in Child Development*. New York: Harcourt, Brace and Co., 1954.
- McGraw, M. B., *Growth: a Study of Johnny and Jimmy*. New York: Appleton-Century-Crofts, Inc., 1935.
- Piaget, Jean, *The Construction of Reality in the Child*, (translated by Margaret Cook). New York: Basic Books Company, 1954.
- Seidman, J. (Ed.), *The Adolescent: A Book of Readings*. (New York: Dryden Press, 1954.
- Skinner, C. E. (Ed.), *Educational Psychology*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951, Chapters 2, 3, 4, and 18.
- The Forty-third Yearbook of the National Society for the Study of Education*, Part I, Adolescence. Bloomington, Illinois: Public School Publishing Company, 1944.
- Thompson, G. G., *Child Psychology*. Boston: Houghton Mifflin Company, 1952, Chapters 2 and 3.

4

STAGES IN HUMAN LIFE

Introduction

NATURE OF LIFE "STAGES" IN MAN

The purpose of this chapter is to describe the psychological characteristics of childhood and adulthood and to draw therefrom certain inferences which may prove helpful for teaching.

The title of this chapter implies that there are stages in the life of man. The differentiation of the life cycle of any organism into several partially discrete periods and the designation of these periods by descriptive terminology serve the useful purpose of facilitating discussion. They have the disadvantage, however, of misinterpretation by any who may assume the cleavage in the growth of the organism to be as sharp as it appears from the printed descriptive categories themselves. For example, to state that the period of adolescence is normally from about age twelve to sixteen or seventeen, is only to begin to paint the general picture, which is different for the sexes, to some extent for races, and certainly for individuals.

This misleading effect of categorical definition has led some students of child psychology to avoid almost entirely the use of terms such as "infancy," "adolescence," or the like. The fact remains that there are several reasonably well differentiated life stages, marked by characteristic physical phenomena and typical mental and social performance. Even a child can distinguish differences in the appearance, bearing, and habits of a baby, an adolescent, and an elderly person. A later section in this chapter will enumerate some of the characteristic behavior patterns of the early life periods.

**FUNDAMENTAL HEREDITARY WANTS
AND DESIRES**

One of the salient features of human development which deserves consideration is the nature, number, and educability of the several kinds of "unlearned" response. Unfortunately, although authorities are universally agreed upon the value of considering unlearned behavior, they are far from agreed upon either the nature or the number of "instincts." Some writers have held that the number of "original" hereditary responses is extremely small and that the multiplicity of strongly reinforced actions to be observed in the adult is the result of primary, secondary, and higher conditioning, springing from this narrow base in inverted pyramidal fashion. Others have contended that original behavior is wide in its scope, covering practically the entire gamut of mature adult behavior even in social situations, and that maturity accounts for the appearance of some unlearned behavior at a time considerably subsequent to birth. Obviously, the first theory calls for close attention from students of child psychology, since it throws a much sharper emphasis upon environment and teaching.

Thorndike¹ has maintained that the effort to distinguish the unlearned components of behavior from those which are acquired is sociologically and educationally profitable for several reasons which are herewith paraphrased:

1. The successful differentiation of the unlearned in behavior provides knowledge of prepotent behavior trends, of which some are comparatively unalterable, some can be shaped or modified, but none are completely eradicated.
2. The differentiation of hereditary behavior components is valuable, because even though some of the tendencies which are suspected of being fundamental unlearned behavior are later found not to be so, it is likely that such tendencies will still constitute fundamental mixed learned and unlearned patterns from which spring numerous "special desires and aversions."
3. The mere search for fundamental human behavior clarifies our notion of the dispersion of wants racially and phylogenetically.
4. Any reasonably accurate list of unlearned responses furnishes a cue to basic qualities of satisfaction—a list which is superior to one merely

¹ Adapted from E. L. Thorndike, *Human Nature and the Social Order* (New York: The Macmillan Co., 1940), pp. 115 et seq. By permission of the publishers.

of those situations which produce satisfaction or annoyance. Many of those situations which produce satisfaction may have the same quality, but the psychological essence is the quality itself, and not the situation which happens to contain it.

5. Accurate knowledge of unlearned hereditary behavior permits the genetical classification of desires and aversions.

After elaborating at length on the above and developing other criteria of selection, Thorndike states a definite list of desires and aversions which he regards as basic in human behavior. Because of its fundamental importance psychologically and educationally, this list is herewith reproduced.

DESIRES.²

1. bright colors and glitter; sunshine; soft, tinkling, and rhythmical sounds; sweet, fruity, and nutty tastes; touching what is soft and smooth and dry.
2. free bodily movement; rapid motion through space.
3. healthy normal action of the digestive, circulatory, excretory, nervous and other physiological systems.
4. having something behind one's back when resting; "being in a sheltered nook, open on only one side," as James says.
5. the presence of friendly, or at least not inimical, human beings.
6. "concerted action as one of an organized crowd."
7. to move when refreshed, especially as in running, jumping, climbing, pulling and wrestling.
8. to rest when tired.
9. vocalization; visual exploration; manipulation.
10. mental control; to do something and have something happen as the consequence is, other things being equal, satisfying, whatever be done and whatever be the consequent happening.
11. witnessing the happy behavior of other human beings, especially of children.
12. successful courtship and love between the sexes.
13. voluptuous sensation, however obtained.
14. to manifest affection.
15. to receive affection
16. intimate approval, as by smiles, pats, admission to companionship and the like from one to whom he has the inner response of submissiveness; humble approval, as by admiring glances, from anybody.
17. domination, being submitted to by others.

² Adapted from E. L. Thorndike, *Human Nature and the Social Order* (New York: The Macmillan Co., 1940), pp. 117 and 118, by permission of the publishers.

18. to surpass others in the work or play to which original nature leads us and them.
19. submission to a person toward whom it is the "natural" response.
20. In general, when any instinctive behavior series is started and operates successfully, its activities are satisfying and the situations which they produce are satisfying, other things being equal.

AVERSIONS.

1. the sight of black; sudden loud sounds; bitter tastes; the odors of putrid flesh; excrement and vomit; sensory pains; over-tension of muscles; impeded or insufficient action of the bodily organs.
2. slimy, wriggling and creeping things on one's flesh.
3. large animals or objects like animals approaching one rapidly; angry scowling faces; solitude; darkness; being suddenly clutched.
4. pain.
5. severe shock of any sort.
6. being interfered with in any bodily movements which the individual is impelled by his own constitution to make.
7. the intrusion of strangers into the neighborhood of one's habitation and the abstraction of any object therefrom.
8. the seizure by others of an object which one is using.
9. being shut up completely within a small, and especially a strange, enclosure.
10. being subdued by a person to whom (or a thing to which) one does not naturally have a submissive attitude.
11. inattention or neglect by human beings whose attention one solicits.
12. the withdrawal of approving intercourse by masters.
13. looks of scorn and derision from anyone.
14. seeing others approved.
15. being outdone by others.
16. In general, when any instinctive behavior-series is started, any failure of it to operate successfully is annoying.

In a later chapter on learning, the mechanism whereby any established response pattern becomes merged with, or transmuted into, other response patterns will be described in some detail. It is to be noted here, however, that this phenomenon applies to the above list of desires and aversions. They seldom appear in simple, uncomplicated form; rather, they are likely to occur in varying combinations and to be modified according to the background and experience of the individual.

PLAY

Play appears to be a natural tendency and obviously one closely connected with any system of education. Play is difficult to define.

Misunderstanding of the true psychological nature of play activities undoubtedly accounts for many unwise parental and pedagogical practices. Although there is no doubt that, to be of recreational value to the organism, play should contain a definite element of spontaneity, it would be overly simple to conclude, therefore, that play activities should never be supervised.

Both observational and physiological studies of work activities give definite evidence that the tension factors involved in the concentration necessary to hard mental work are physical in nature. The cumulative effect of these fatigue factors inevitably tends in the long run to reduce efficiency and augment the fatigue itself. In this situation of hypertension, any activity on a spontaneous and relaxational basis is of value to the organism. Play is a beneficial activity, and as such should be planned for in more curricula.

It is literally true that one man's play may be another man's work. This being the case, it appears that the psychological essence of play is to be found more in its volitional and spontaneous nature than in any set of criteria of a play activity. This is a point which sometimes seems to escape those who are endeavoring to organize a recreational curriculum. Play, like appreciation, tends to lose its qualitative essence when the factor of compulsion becomes strongly in evidence. This being the case, it is as highly unpsychological to force children into play activities toward which they are strongly disinclined as it is to attempt to compel their appreciation of something for which they have no desire.

Studies have shown a wide variety of play interests in children, with considerable tendency toward sex differences. These play interests tend to run a normal self-determined course without much difficulty, and in most cases little external intervention is required. It is not, for example, often necessary to compel girls to stop playing with dolls, since a combination of changing natural interests and social factors produces this result.

Play activities provide not only physical release but also a creative and developmental outlet for many children. Activities may take the form of exploration and experimentation in rhythms, dancing, singing, creating music on crude instruments, releasing feelings through expressions in color or form, exploring and experimenting with materials, and putting on puppet shows or dramatizations—with or with-

out adult assistance. Spontaneous play-acting may be a means of trying out and interpreting different roles, imitating the behavior of others, or trying to share the experiences of others. The release of both physical and emotional energy which takes place in play, as well as growing mastery of realities, may be beneficial. The observing teacher may see in the play activities of children reflections of interests, understandings, aspirations, problems, and conflicts. Care should be exercised in interpreting children's play activities, however, because diagnosis must be based on considerable knowledge of the child and his background and experiences as well as deep understanding of the experimental nature of play and penetrating knowledge of the interpretation the child puts on his own acts. The teacher can help the child in his understanding of himself, both as a creative individual and as a member of a social group. In directing play activities, the teacher can help the child to become an effective, cooperating member of a social group, to play as a member of a team, to experiment with social skills and possible solutions to problems, to adjust to the proposals of others without losing his own identity, to develop attitudes and appreciations, and to communicate with fellow creatures in a variety of ways.

There are those who have maintained that it is possible to organize the entire curriculum on a play basis. Commendable as this objective may be, the chances of success, as events have proved in known instances, are slight. To begin with, the play curriculum, which purports to train the individual for serious later life activities, is a paradox and contradiction in term and fact. Routine, often not spontaneous, is an inescapable component of all vocations, as Judd³ has definitely shown. Routine and the ability to follow a routine whether or not one is inclined to do so are contrary to the essence of play.

The Importance of the Early Years

That first impressions are lasting has long been an axiom of the vernacular. That primary conditioning is persistent is an equally sound premise of the scientific study of behavior. The waste and lost motion in the field of education and child training resulting from incorrect habit formation during the early years are enormous. The

³ Judd, C. H., *Psychology of Secondary Education* (Boston: Ginn & Co., 1927), pp. 14 et seq.

entire field of remedial education, for instance, is encumbered with cases that are testimonials to unwise fundamental training.

Merely because the price of errors is not so immediately apparent in education as in medicine is no reason why the teacher should not be as well informed on recent developments in his field as is the medical man. Yet studies of the number of teachers taking even the outstanding journal which reports recent research findings in their particular field show an appallingly low incidence of subscriptions by classroom teachers. Education is a social science, and every day discoveries are being made which little by little can help us build correct early habits and so improve the quality of both mental and social development of our pupils. Concerning this Rasey writes:

When we consider the life span of people we know, and look at the young people in our schoolrooms, we are impressed with the fact that the years of childhood and adolescence are so few compared with the years most people spend in being grown up. That grown-up period is three or four times as long as the earlier one, for most of us. Teachers are particularly impressed with this fact. It is another way of realizing how crucial is the function of education in the so-called school age, and how expensive are errors made there. If it were not true that patterns of living and angles of outlook which are developed in the early years repeated themselves so persistently, ringing down the years of a life, like a motif in a Wagner opera, it would not be necessary for us to concern ourselves so greatly with these early learnings. We could enjoy children as toys, putting up with temper tantrums and food fussing, indolences and escapings, and just hope they would outgrow them.⁴

SOME PHASES OF CHILD DEVELOPMENT

It is our purpose in this section to cite certain factors in child development of interest to the teacher. Data corroborating and supporting the generalizations herein laid down are too numerous and technical to be included in this section but can be found in any standard text in the psychology of child development. The following phases will be briefly considered: (a) physical development, (b) social development, (c) language development, (d) creative development, (e) emotional development, and (f) mental development.

a. *Physical development.* Cole and Morgan point out the importance of this factor in the following quotation:

⁴ Rasey, M. I., *Toward Maturity* (New York: Hinds, Hayden & Eldredge, Inc., 1947), p. 209.

The human body shows an orderly series of changes in size, proportions, and functioning from the cradle to the grave. The skeleton, the internal organs, the muscles, the nervous system, and the glands go through a series of developments that inevitably influence an individual's intellectual and emotional reactions.

Growth is the basis of all change. If a child did not increase in stature and weight, if his muscles did not become strong, if his sex organs did not grow, if his brain did not mature, if his internal organs did not increase in size and efficiency to meet the requirements of an enlarged body, the child would never become an adult. So far as parents and teachers are concerned, however, the facts about growth are mainly important in their indirect influences upon the personalities and capacities of boys and girls.⁵

Innumerable studies of growth, both physical and physiological, have been made for the purpose of determining height, weight, and health norms as well as periods of learning readiness. The present tendency is to use such norms primarily as guides rather than as absolute standards to which every child's growth must be forced to conform. Modern authorities on health have a tendency to feel that, if a child's behavior is effective, adequate, and comfortable, probably growth may proceed in something resembling optimum fashion. The characteristics of physical growth and development at different stages of human development, particularly childhood and adolescence, have been treated more extensively in the preceding chapter on "Growth and Development."

b. *Social development.* The young child quickly discovers methods of social control, and adapts his cries of distress and other behavior to effect such control over others, but this conduct is highly egocentric and its purpose selfish. Unless later training forces him to do otherwise, the infant is likely to carry his methods of social control into an age level when they will be not only ineffective, but definitely conflict-producing.

Children begin to pay attention to their companions at a comparatively early age, certainly before they are a year old. This interest is likely to be diffuse in nature, but it rapidly becomes more specific, and typical human preferences and dislikes begin to appear. Naturally, the processes of social education at this early age are made more difficult by the child's failure to control the language mechanism. It is highly probable that some of the difficulties that older children

⁵ Cole, L., and J. J. B. Morgan, *Psychology of Childhood and Adolescence* (New York: Rinehart & Co., 1947), p. 3.

have in making social adjustments are the result of habits formed previous to the acquisition of language.

Jersild⁶ has an excellent discussion of negativistic behavior in infants, a puzzling and irritating trait that causes teachers no end of trouble. Jersild feels it impossible to ascribe negativism to any single factor, but that often it may be the result of overstimulation, such as, for example, asking a child to repeat over and over again something that he is just learning to do. Normally, negative tendencies disappear gradually, but there is evidence that in some instances they become progressively reinforced and result in the chronic dissenter with whom we are all unhappily familiar.

It is important to train children in cooperation during the early period of their social development. Cooperation and the recognition of the nature of personal property are basic for social adjustment to a democratic capitalistic society.

Cooperation is learned in early play activities, in sharing toys and possessions, in observing the rules of play and learning to respect the rights of others, in the gaining and yielding of "turns," in joining with others in building a common project, in taking on responsibilities and going on errands, and in working together for fun and pleasure. Responsibility for the care of pets can be a rich learning experience in developing understanding of animal needs and the provisions which must be made for their comfort. At school, the study of animals' homes can enhance children's appreciation of their own homes and the provisions that are made for their basic needs. The home and family unit provides an intimate social experience for the child. Sharing with playmates extends his social horizon, brings new problems, and requires new adjustments. When the child's world is expanded to include his classmates at school, further adjustments are required. Personal responsibility for conduct, for taking care of possessions, for getting along with others so as to enjoy the rewards of companionship and friendship, and for sharing with others is a lesson to be learned in early school experiences. Play activities and group projects help to build commonalities of interests and goals which contribute to the child's social integration. As he progresses in school he develops an identification with his classmates, school, and certain

⁶ A. T. Jersild, *Child Psychology*, Rev. Ed. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1940), p. 170.

interest groups. Slowly he learns to assume some responsibility for others—for younger children, for companions, for members of his school community. Being a member of the school patrol gives the child a serious sense of responsibility. Being a citizen of the school community carries with it responsibilities for the welfare of the group in many forms. Occasionally, the responsibility extends to others beyond the school, particularly when, as more mature pupils, they provide entertainment or material things for children less fortunate than themselves. The development of social responsibility, citizenship, social values, a sense of personal worth, respect for others, and social skills is the goal of the educational program for social development. Countless activities in the classroom and on the school grounds contribute to the social development of the child. In the middle grades, through field trips, films, and wide reading, the child begins to see and experience relationships in a wide community, in the nation, in the world. Growth toward social consciousness proceeds during childhood but is rapidly accelerated in the adolescent period, when it sometimes appears that the adolescent is concerned only with his personal-social relationships. During middle childhood, social development is closely related to the development of communication skills, to the ability to make oneself understood and to understand others, and social appreciations begin to expand with the widening horizons which come into view as the child climbs the reading ladder.

c. *Language development.* Comparative psychologists rank man's ability to communicate with his fellows in symbolic fashion as one of the two or three outstanding distinctions between man and lower animals. Man's entire civilization and social structure would collapse in ruins were language to be taken from him. It is highly probable that any sharp decline in the elaboration with which man can use language would be accompanied by a similar and proportionate decrease in his social machinery. Not only is language of inestimable value for the purely utilitarian purpose of communication, but it is also the mechanism with which modern man does his thinking and solves many, if not the majority, of his problems. It is for the latter reason that some students of the modern curriculum are inclined to feel that systematic vocabulary training should be continued far above levels where it is now customarily stopped, and that, if this were done, it would be possible to increase the functional vocabulary of the average high school graduate to 40,000 or 50,000 words in place of the

present 12,000 or 13,000. Thinking power might not increase in direct proportion, but there is little doubt that it would increase materially.

One of the key pedagogical factors to be borne in mind in connection with language development in children has to do with exact ideas of meaning. Studies among high school and college students give clear evidence that knowledge of words in many cases is fuzzy and inexact, being based in countless instances upon careless inferences from the context. It is not at all difficult to trace the parallelism between the vagueness of meanings resulting from a slipshod method of learning words and a thinking process that is weak because it is necessarily dependent upon these words.

There is no doubt that meanings enlarge with experience. It is likewise true, particularly in the case of abstractions, that it is impossible for the child to get the richness of connotation that an adult possesses, but still it is not necessary that all concepts the child has be vague and nebulous. Knowledge that a giraffe is an animal is satisfactory as far as it goes. To know that it is a certain kind of animal with a definite and characteristic physical structure, that it lives in certain parts of the world and not in others, and that it has typical behavior patterns—all these are highly contributory to the basic concept, although in their totality they still do not represent knowledge sufficient for a biologist. It is sometimes a problem to know at what point to cease expanding a concept, and certainly there is such a thing as overdefinition of a term, but the difficulty usually lies in the other direction.

One other thing that should be noted in language development is the use of language as an instrument of deception. All adults are familiar with the fact that language is not always used to communicate realistically. The child at a surprisingly early age learns this falsifying function of language. It is customary to attempt to dissuade him from using language in this way by punishment and moralisms. To these deterrents should be added at least some explanation of the fact that systematic use of language as an instrument of deception inevitably results in some vitiation of thinking, probably because truly deceptive language is almost certain to be a complicated admixture of fact and fiction too involved for even a mature mentality to keep the two separate in memory.

Language development is closely related to the variety and intensity of experience, both in the classroom and outside the school.

To provide the maximum development of language skills, the teacher must not only permit the child to enjoy a variety of meaningful experiences but also must make possible the association of suitable vocabulary with those experiences. Opportunities for oral and written expression abound in the school, but the teacher has a real responsibility in seeing to it that through verbal expressions the child grows in precision of expression, clarity of thinking, use of colorful and picturesque language, and skill in communicating exact thought and feeling to others. Skill in verbal expression and skill in interpreting what is read or spoken are not only basic social skills but also the tools of creative communication in today's world.

d. Creative development. The average child, if left to his own devices and surrounded by physical subjects that challenge his curiosity, will indulge in a limited amount of experimentation and creative effort. In the mental field, also, the child will air his own fancies in such directions as the writing of poetry. It is doubtful, however, whether the development of real creative ability consists primarily of the untrammelled development of these natural tendencies. There is little question that completely unsupervised and spontaneous creative effort may produce masterpieces of interest to a surrealist, but there is more than a little doubt that this method will produce anything else.

One fundamental necessity of all creative expression is sound technique based on principles that have stood the test of experience. A period of free, spontaneous initial activity is far more likely to produce a set of incorrect habits than to effect anything else. The reason why there are so many dub golfers is that too many of us indulged in creative activity in the field of golfing before we had a correct stance, swing, and so forth, and usually the behavior pattern that resulted was not as efficient as the formula developed by generations of experienced professionals.

However, somewhere between complete permissiveness and regimentation is a suitable climate for truly creative expression. If the child's explorations into both material and intellectual problem-solving are guided by an understanding teacher, he can experience the satisfactions of making many discoveries for himself, whether they be "new" combinations of colors, "new" relationships among numbers, or a "new" way to lift a heavy box. The discovery may not be original with the pupil in the sense that no one else has ever thought of this before, but, if in the process of solving his problem the child has

arrived at a solution which is really new to him, he has experienced the feeling of discovery and had a truly creative experience. There is considerable difference between following a trail someone else has established and breaking one's own way through the woods—between copying and creating. The flexibility and adaptability, coupled with the ability to anticipate or foresee results, required in creative work cannot be cultivated too early. Many of the needs of today and tomorrow will be met by creative minds already at work in classrooms. The discriminating teacher who can identify the child who has truly creative insight into spatial, numerical, physical, verbal, and social relationships contributes to the child's development of creative ability and expression by providing him with both challenge and recognition, stimulation and satisfaction, during an early plastic period of growth.

e. *Emotional development.* From a comparatively small number of instinctive emotional reactions, the child quickly acquires a startlingly large repertoire of conditioned fears, angers, and prejudices. This is the key problem, pedagogically, in the case of emotional development. The basic fact to be borne in mind is that emotion can be conditioned and emotional responses attached to an infinite variety of situations. Sometimes the problem resolves itself into one of reconditioning or the effort to eradicate a response, such as a phobia, which has been established early. Of the several methods that can be employed in reconditioning, probably the best is the introduction of a competitive situation of pleasant feeling tone. Jersild,⁷ in discussing the particular technique to be used in reconditioning fear responses, expresses doubt of the efficacy of trying to talk a child out of his fear.

Emotional development presents the same kind of learning problem as any ordinary school subject, a problem that is solved in its major aspects by correct habit formation. It is an error to regard the pedagogy of emotion as qualitatively different from the pedagogy of school subjects; in both cases, the correct formation of habits is the primary problem.

The element of fixation is perhaps more in evidence in emotional adjustment than in some of the more prosaic portions of the curriculum. The typical response of any person when thwarted is progressive emotional reinforcement of the tendency toward the desired activity. Whenever a strongly diverting circumstance appears, the

⁷ *Ibid.*, p. 275.

problem of insurmountable emotional readjustment seldom arises. The writer witnessed an amusing illustration of this fact when two men were arguing about the present world scene. The situation represented complete blocking on both sides and was highly focalized and vocalized. It was being characteristically reinforced and was approaching a possible beginning of other than verbal hostilities. During the altercation, the chimney of the house caught fire, but the volume of smoke produced was sufficient to convince everyone present that the entire house was in flames. Neither of the parties was sufficiently interested in world affairs to continue arguing about them while the house burned down, nor did they leave the house continuing the argument as they went. Unfortunately, so powerful an external circumstance does not obtrude itself in most cases of emotional blocking. It is, however, possible and practical to form the habit of substituting other activity, beginning at the elementary stage with the habit of counting to ten before getting into a fight and continuing with intelligent investigation, self-analysis, and planning when faced with more fundamental blockings.

The emotional needs of children are sometimes inadequately met. Parents may make adequate provision for physical needs without giving the child the affectionate attention and loving care he needs for a feeling of emotional security. The child who experiences deep rejection may make his adjustment in a variety of ways: by daydreaming, by living in a world of fantasy, by aggression, by taking out his hostility on others, by demanding emotional satisfaction from peers, or by making demands upon his own performance which are beyond the possibility of his achievement. The teacher who recognizes behavior symptomatic of anxiety and emotional conflict may need help in diagnosing the child's real difficulties in social and personal adjustment and in helping the child to make more satisfying and acceptable adjustments to his emotional problems. A careful analysis of basic personality needs provides clues for planning activities and opportunities for each child. Adjustments cannot be static, and the child must progress in his ability to make new adjustments to new problems as they arise. His growing awareness of the feelings and emotions of others and his growing power to adjust to the demands of others as well as to his own emotional needs are important aspects of his education for mental health. The educational program sometimes over-

looks these aspects of child growth and development. An individual's happiness in life is influenced by his understanding of the role of feelings and emotions, by his ability to control those feelings in himself, and by his ability to influence the feelings of others. Perhaps little can be done in a direct or formal way to incorporate these learnings into the curriculum, but the teacher in the classroom can make a significant contribution to mental health by establishing an atmosphere of acceptance in the classroom wherein the child can work out his problems and develop adjustability to a variety of situations. The emotionally mature teacher who exemplifies the kind of emotional control and dynamic growth he tries to cultivate leads the way for his pupils.

Early school years are likely to be characterized by emotional instability and uneven performance. At about the age of nine or ten, the child for whom all has gone well usually reaches a peak of emotional stability. Still later, adolescence is likely to be characterized by emotional instability.

f. Mental development. It is probable that the individual does not materially increase his potential mental capacity during the course of a lifetime, in spite of the hopeful pronouncements of some optimists. Mental development, therefore, does not consist of increments in basic capacity, but rather involves the development of particular aspects of mentality and the elaboration of knowledge.

In promoting mental growth, we should pay far more attention than we do to the fact, admitted by neurologists and psychologists, that the average person has far more mental power than he usually uses. What the average, normal student needs is not more mental capacity, but more challenge to that capacity which he has.

Evidence of achievement indicates that creative individuals frequently make outstanding original contributions to knowledge in early adulthood. This possibility places considerable responsibility on the schools to stimulate children to master basic skills, to develop problem-solving abilities, to think both critically and creatively, and to establish suitable, worthwhile goals. Motivation, recognition, and rewards have their part in stimulating achievement. A broad and balanced curriculum coupled with classroom procedures which are efficient, stimulating, challenging, and rewarding set the stage for progressive advances into higher levels of learning.

Behavior Trends of Children

BEHAVIOR TRENDS IN THE PRESCHOOL CHILD

This section and the two following give a few of the outstanding behavior patterns of children that are of interest to teachers.

First to be noted in the preschool child's behavior is the geometric expansion of sensory experience and the sensory basis of learning. The preschool child is busy laying experiential foundations for his later learning and thinking. This is accomplished partly by casual experience and sometimes by a planned curricular regimen. A considerable portion of the preschool child's time and energy is devoted to play activities and play-work activities. For example, many schools utilize children's desire to cut out pictures and to draw for a beginning step in developing scrapbooks which are the prototype for later and more formal notebooks, laboratory records, and so forth.

The preschool child also experiences the beginnings of adjustment to routine. Often a delicately balanced judgment is required to determine how much routine a child should be forced to undergo. Cases of children who have been forced by circumstances to assume considerable household responsibilities have demonstrated that even young children can become adjusted to a considerable amount of routine activity.

BEHAVIOR TRENDS IN THE PREADOLESCENT

The child of elementary school age continues to expand his sensory experiences, to play, and to become adjusted to further routine activities. A salient activity of these years consists in the rapid acceleration of vocabulary acquisition. The young child's contact with objects is not always verbalized or expressed. A little later, however, the child desires, and adults are usually willing that he should have, words to describe the objects with which he is dealing.

Another thing that the preadolescent experiences is an increase in contact with social customs. Things that would be regarded as cute in a baby are less likely to be appreciated in a ten-year-old. He is expected to acquire some notion of what personal property means, and to have at least a rudimentary concept of the rights of others. The minutiae of social aménity may still be a mystery to him, but he is expected to know the basic rules.

The behavior of the boy or girl also gives evidence of the beginnings of economic consciousness and the development of a standard of values so necessary in a rounded comprehension of the system of private property. It is about this time that savings banks appear and that the child begins to realize that money does not grow on trees, a notion that will not have full meaning for him, however, until he has gone out and tried to earn some of it.

The first two years of school represent a period of somewhat difficult adjustment, but at about eight years of age the child usually establishes a consistent growth trend in many aspects of his development. By the third grade, the child has made a fairly satisfactory adjustment to school and comprehends what his parents and teachers expect of him, but he is beginning to need less support from adult authority and to seek the approval of his peers. By nine, or thereabouts, he accepts routines, usually conforms to adult standards, and is generally pleased to accept responsibilities. He may, in fact, be overstrict in imposing and enforcing rules of fair-play or ethical standards. He begins to identify himself with peer groups, usually children of the same sex, and to take pride in their group undertakings. Generally, he finds satisfaction in what he does and what he learns. He may be enthusiastic about many things and he may be especially interested in improving his skills. For most children, the preadolescent years are productive, a period of rapid growth in behavior organization, and are not beset with the problems of adjustment characteristic of either early school years or adolescence.

BEHAVIOR TRENDS IN THE ADOLESCENT

The problems of adjustment for the adolescent are often critical. He is sometimes troubled by personal fears and anxieties or vague feelings of insecurity—even when his behavior is most assured. He is sometimes clumsy and likely to be acutely conscious of any way in which he differs from his peer group. He is trying to learn the many new cues to adult behavior. He needs to establish his personal identity; he prizes the social acceptance of his peers; he desires economic independence; he seeks a satisfying sex role; he must make some critical decisions about a career; he assesses his physical powers and personal adequacy. He may come into conflict with the role he believes is expected of him by his family. He may appear ambivalent. He is often idealistic. He needs considerable guidance in self-evalua-

tion, in knowledge of the real world, and in making those choices and decisions which will lead to the most satisfying, acceptable, and realistic adjustment possible in light of his abilities and aspirations. He is sometimes impatient for the realization of remote goals and needs motivation toward vital goals. The adult whom he accepts and respects can give him support in worthwhile goals and help him to achieve the role to which he aspires as he emerges into adulthood. The school organized to give the pupil ample opportunity to find his role in a variety of activities contributes to the discovery and realization of each individual's potential.

Superficially, the adolescent often appears to be completely mature. This opinion may be enhanced because he has by this time acquired a certain amount of poise, backed by a considerable amount of experience and education. Actually, of course, the adolescent is still an immature organism in the process of development. One of the phases of development in which the adolescent is principally engaged is the acquisition of certain abstract ideas, techniques of judgment, and reasoning. The vocabulary of the younger child tends to consist of definite names for concrete objects. The adolescent has made progress in mastering the meaning of terms where that meaning depends upon the fusion of sensory experiences rather than upon the apprehension of one object.

The behavior of the adolescent should also give evidence of some self-discipline, depending upon the amount of freedom allowed in the family and in the school. He has had experiences in situations where he is his own boss and where his every move has not been under the eye of some monitor.

A final and crucial phase of adolescent behavior patterns is the approach toward personal maturity. Although it is true that personality can and does change throughout life, the post-adolescent set is likely to be more or less permanent. In fact, the changes in personality that occur after adolescence are likely to be few and far between.

Behavior Problems and Delinquency

One of the persistent problems that plague both parents and teachers is to direct child development in such a way that maladjustment and social delinquency will not occur. In considering this problem, three assumptions will be made:

1. That delinquency is primarily a factor of poor adjustment, and not one of heredity.
2. That "delinquency" is a relative term, descriptive of a low degree of adjustment rather than of a lack of conformity to a list of absolute virtues.
3. That no single cause of delinquency underlies all the major categories of maladjustment.

In some ways, it is surprising that the amount of social maladjustment that one encounters is not greater than it is. Undoubtedly, some well-meaning but poorly conceived training in "individuality" is the cause of some social maladjustment and delinquency. Much delinquency is nothing more than nonconformity with established mores. It is far too much to expect an unsophisticated child to divine mores by intuition and to generate a desire to conform to them *ex vacuo*. Society owes the child, through its educative agencies, a knowledge of the standard of conduct that it expects, plus some training in the desire to conform. To quote the *Forty-Seventh Yearbook* of the National Society for the Study of Education:

It could be argued that the real marvel of our complicated times is that so many children and youth get on successfully with their developmental tasks and that they learn to meet, survive, and surmount these complications without resorting to delinquency. For ours is a dangerously complex social structure in which to learn one's way, and this is an age which hurries along without regard to the traveler not sure of his path. Within this setting our millions of children and youth are growing up—learning new things about their world, how it works, what it means; they are acquiring new skills, perfecting and applying them; they are experiencing pleasure, disappointment, failure, success, affection, shock—and growing in ability to sense the real importance of each; they are getting some understanding of themselves and their part in what goes on. They are doing this—millions of them—in a way which makes us justly proud of our American youth.

To say that this accomplishment has not been left wholly to chance is not to minimize youth's own real achievement. Society has always tried to set up institutions which facilitate sound growth, and our American society is no exception. Churches, schools, libraries, playgrounds, health departments, clinics, all these and many more, have the common aim of helping children and young people grow up successfully.

Of them all, however, the school must carry the heaviest responsibility. It is universal and free; its use is compulsory. Therefore, it has the obligation to serve the varied and often unpredictable needs of all children. To do this it must have a program that is broad and rich and stimulating; a

place that is safe and comfortable and conducive to varied learning activities; a staff that is professionally prepared, interested and wise in the ways of dealing with children, personally well adjusted, and professionally secure. Such a school will have as its goal the best possible development of all boys and girls. Along the way it will have to stop now and then to concentrate on the problems of those children who have failed, but the school will think of *their* failure as *its* failure.⁸

Yet only recently has a systematic effort been made in such fields as safety education to instruct the young in legal standards and conformity to them. We should find the equivalent of the schoolboy traffic patrol in many phases of modern society. Much is being done in certain communities to combat the kind of destructiveness which used to be associated with Halloween. Student councils and representatives from schools within a community have organized, with adult help, recreational programs that boys and girls will accept and support, and, through leadership, they make it "the thing to do" to share these activities. Occasionally, of their own volition, the pupils of a community may change the "trick and treat" to a constructive end and collect specified items for a certain charity or welfare project.

One thing that criminological studies have shown is the disastrous effect of inconsistency upon the young. We all know the detrimental results of disagreement between parents in the disciplining of the child. Such conflict has a thousand counterparts in social life in general. Obviously, it would be impossible to correct all circumstances of inconsistency in society, but it is not too much to expect that at least those who are in charge of educating the younger generation should be consistent in their conduct. Furthermore, many cases that to the child seem inconsistent can readily be explained, once they are located as the source of difficulty. For example, the writer once taught in a private boys' school where the pupils were forbidden to smoke. The well-meaning headmaster believed it would be easier to enforce this rule if the faculty did not smoke. But, although he had a rule to this effect, certain of the faculty resented this circumscription of their conduct and smoked surreptitiously, a fact which the boys quickly discovered. The discovery was followed by a wave of student infringement of the rule against smoking. When the rule

⁸ National Society for the Study of Education, *Forty-Seventh Yearbook*. Part I, "Juvenile Delinquency and the Schools" (Chicago: University of Chicago Press, 1948), p. 8. Quoted by permission of the Society.

against faculty smoking was abrogated and the entire situation explained to the boys, all difficulties disappeared. The point to be noted is that the inconsistency in the professed beliefs and conduct of the faculty was the root of the student misconduct.

Studies of juvenile delinquency have shown a high relationship between serious delinquency and truancy or broken homes. It must be kept in mind, however, that broken homes and truancy are not, in themselves, causes of delinquency, but more often symptoms of possible problems such as lack of emotional security and fear of failure. Symptoms are merely clues that there may be more serious problems underlying the behavior of the child: feelings of hostility, rejection, or insecurity; fears and anxieties about many things; unsatisfied physical or emotional needs for acceptance and affection, for autonomy or recognition, for achievement, control, or novelty; or other serious trouble. Sometimes the symptoms are merely signs of emotional growing pains. In the early stages, sometimes not even the experienced clinician can segregate the truly serious from the apparently serious cases. Persistently aggressive, defiant, destructive, impulsive, hostile, resentful, and stubborn children obviously need help. The school cannot entirely compensate for the lack of cohesiveness of a family, but it can sometimes create constructive cohesiveness in the class group.

Cumulative troubles may be really damaging. The alert teacher who recognizes early signs of maladaptive behavior and finds help for the child before the damage is rampant may save him from a career of destructive and antisocial behavior. Identifying the unhappy child early is the first step in combating juvenile delinquency. If, by the age of nine or ten, the child has not made the adjustment that may normally be expected, help is needed. The teacher is not in a position to remove all the contributing causes of unhappiness, but with the assistance of child guidance clinics, school psychologists, school visitors and social workers, and other community and social agencies, help may reach the child during the preventive stages.

Maturity

Maturity is that period of life extending from about the twentieth year to the age of 60 or 65. This general statement, however, admits of numerous exceptions and at best describes merely the average

limits of adult life. Actually, maturity is a relative term, and no hard-and-fast criteria of maturity or its duration can be laid down. It has been pointed out elsewhere that there are both individual and race differences in the onset of puberty, and the same may be said for maturity. Likewise, the duration of the mature period of life depends upon so many factors, such as original biological virility, disease, and health habits, that it is impossible to predict such duration in the case of a given individual with any accuracy. In this discussion, "maturity" is taken to mean the span of middle-age years during which the individual is at the height of his potential physical and mental performance.

Physically, one should be at his best during the period of maturity. The physical regimen of that period determines both its duration and the happiness of old age. Unfortunately, many of the common expressions and opinions concerning the health potential at maturity are borrowed from, or influenced by, the field of sports, in most of which for performance purposes one is considered not only mature but actually aged by the middle thirties. Men like William Hoppe constitute the exception and marvel of the sport world rather than the average. The sport world is not a valid criterion, and it should not be looked to for an index of the physical nature of maturity. To begin with, the majority of sports, particularly the more strenuous ones, require a completely abnormal energy production and output. It is all very well for coaches and professional athletic performers to point with pride to the magnificent physical condition of athletes. No doubt such condition is beneficial and might well be copied in many of its aspects by all of us. The fact remains that, in highly competitive sports such as boxing, where income depends upon the number of performances and their success, the wear and tear on the organism and the accelerated rate of organic degeneration is very great. Even in a game like baseball, where the performer does not take the same kind of physical beating that he does in boxing, it is rare to find a regular member of an outstanding team past the age of 35. It is true that according to many authorities one reaches the potential physiological peak relatively young and remains for a time at a period of comparatively stable high-level performance declining slowly to a lower level. The significant thing to be noted in the curve of energy output during the individual's life is not that it reaches its peak comparatively early, but that the decline is normally slow and

vitality affected by a number of factors such as diet, rational health habits, and so forth, which are more or less completely within the control of the individual himself. Medical science has gone a long way in solving the riddle of many degenerative diseases and other factors that bring on an early senescence. It is up to education to produce a health program that will still further level out and lengthen the plateau of high physical performance during the years of maturity.

In the matter of mental functions and thinking capacity, it is probable that one does not reach his true psychological maturity until the middle or late period of physical maturity. Some past experiments, particularly of the skill variety, indicating that in the mental field also the peak is reached early, were so specialized that it is extremely unsound to generalize from them. Insufficient experimentation on higher-level processes is at hand to warrant final conclusions. Such experimentation as there is at the present time on higher-level functions tends to show that certain mental performances, such as discriminating judgment, depend heavily upon experience and maturity. There is another factor which should be borne in mind in a consideration of the learning ability of the mature adult both in physical and mental states—the factor of motivation. Thorndike⁹ in an excellent series of experiments on the nature of adult learning has shown that when adults are motivated equally with younger persons their learning in many functions is comparable in both quantity and quality. Obviously, in order to come to any sound conclusions concerning the comparative mental capacity and learning ability of persons of various ages, it would be necessary to hold constant all the variables except the one under investigation, and this is difficult to do. The performance of persons of comparatively advanced years in universities and colleges also indicates something to the same purport, although this evidence cannot be taken as experimental or scientific, at least until sufficient cases are gathered. For example, in one case, a mother in her sixties entered a university for the sole purpose of testing the validity of certain of her daughter's contentions. Her daughter, who had been doing rather poorly in school work, when upbraided by her mother, gave the excuse that the mother could do no better. The mother took an entire four-year course and graduated at the head of a class in which her daughter was near the foot. It is recog-

⁹ Thorndike, E. L., *Adult Learning* (New York: The Macmillan Co., 1928).

nized that numerous variables enter a picture of this sort, such as additional experience and possible higher original intelligence. The point being emphasized is that a well-motivated adult can often compete successfully with younger people in learning situations such as university classes. This fact should have definite pedagogical implications, particularly for the field of adult education, because frequently older persons feel a needless inferiority in this respect.

The years of maturity should witness the practical completion of the process of socialization. One must learn, and in many ways learn by experience, to become well socialized. Although the young adolescent quickly picks up feats of physical skill and can take part in performances requiring such skill, he is notoriously unhappy in many social situations, and the process of his socialization is more often than not, as both he and his teachers will bear witness, a painful one. During the period of maturity, the intelligent and well-educated person makes an effort to analyze and locate his poor habits, both personal and social. Once located, such habits can be either eradicated or changed. Unfortunately, the period of early adulthood is sometimes spent in a crystallization and overrationalization of bad habits and social maladjustment.

Senescence

No psychological subject that has been a subject of interest through the ages is of greater importance than old age. Today more than ever before, attention is directed to means whereby so-called "senior citizens" may spend the declining years of their lives in happiness. An enormous volume of social legislation bearing on the problem has been enacted. Sharp differences of opinion exist as to method. For example, those who hold that work is the true salvation from a bored and crabbed old age are inclined to oppose measures, legislative or otherwise, that would insure to the elderly a life devoid of the necessity of working.

Because old age is so often a tragic experience and because of the length of this period in frequent instances, a psychological consideration of the nature and problems of senescence is in order. Like the term "maturity," "senescence" is relative. Chronologically it may be taken to mean the period from sixty-five years onward. But senescence is far more than a span of years; it is a state of mind—a fact that has been clearly recognized by those philosophers from Cicero

down to the present time who have concerned themselves with a study of this interesting phenomenon. There is no use in blinding oneself to what happens all too often in old age. It is frequently characterized by a crabbed, cynical, querulous disposition. Nor is it possible to excuse the faults of the aged on grounds of infirmity or distress at seeing the mistakes of the young. Though such excuses may be valid in a minority of cases of unusually fortunate persons, in the majority of cases the defect is one in the character of the individual rather than intrinsic in the nature of senescence. A quotation from Cicero's delightful and whimsical discussion of old age will show that the recognition of this situation is not new.

But, the critics say, old men are morose, troubled, fretful, and hard to please; and, if we inquire, we shall find that some of them are misers, too. However, these are faults of character, not of age. Yet moroseness and the other faults mentioned have some excuse, not a really sufficient one, but such as it may seem possible to allow, in that old men imagine themselves ignored, despised, and mocked at; and besides, when the body is weak, the lightest blow gives pain. But nevertheless all these faults are much ameliorated by good habits and by education, as may be seen in real life, and particularly on the stage in the case of the two brothers in the play of that name. What a disagreeable nature one of them has, and what an affable disposition has the other! Indeed the case stands thus: as it is not every wine, so it is not every disposition, that grows sour with age. I approve of some austerity in the old, but I want it, as I do everything else, in moderation. Sourness of temper I like not at all. As for avariciousness in the old, what purpose it can serve I do not understand, for can anything be more absurd in the traveller than to increase his luggage as he nears his journey's end? ¹⁰

Obviously, there is a sharp decline in physical and mental output in persons of advanced age. Although, as in the case of mature persons, inferior performance is partly the result of lack of motivation, in the case of the aged the phenomenon is more real than apparent. Here again, the situation is frequently worse than need be, particularly in the fact that mental output could be much better. Though it is true that physical and mental activity are so intimately related as to be practically inseparable, and though decline in physical ability is likely to be accompanied by a corresponding decline in mental functioning, such decline is frequently more sharp than necessary. One of the causes of this is an overly narrow definition of what activ-

¹⁰ Reprinted from William A. Falconer's translation of Cicero, *De Senectute* (Loeb Classical Library, Cambridge: Harvard University Press, 1923), pp. 77-78.

ity means. The writer once knew an extremely active man whose vocation was commercial fishing. This is a strenuous pursuit, and at a relatively early age this fisherman was forced to retire. For several years he did nothing but mope around, reminisce, and live in the fishing past. His intellectual activities had been conditioned to his day-by-day life. He defined physical activity in terms of commercial fishing. Finally, a discerning member of his household for whom he had deep regard induced him to start reading, particularly books on the history of fishing, boat construction, types of fish, and so forth. Today the same individual is a thoroughly happy member of society, well adjusted, and spending a truly active old age. His activity today is reading—a skilled act. From reading he gets the data for his mental functioning in the same way that he used to get such data from experiences on fishing cruises.

To prevent old age being needlessly dull, it must be planned for instead of merely awaited with mixed feelings of apprehension and distaste. G. Stanley Hall, whose delightful volume on senescence should be read by all persons of forty or over, points this out in a way that needs no elaboration:

It is well at any stage of life, and particularly at its noonday, to pause and ask ourselves what kind of old people we would like, and also are likely, to be—two very different questions. In youth we have ideals of and fit for maturity. Why not do the same when we are mature for the next stage? Why should not forty plan for eighty (or at least for sixty) just as intently as twenty does for forty? At forty old age is in its infancy; the fifties are its boyhood, the sixties its youth, and at seventy it attains its majority. Woman passes through the same stages as man, only the first comes earlier and the last later for her. If and so far as Osler is right, it is because man up to the present has been abnormally precocious, a trait that he inherited from his shorter-lived precursors and has not yet outgrown, as is the case with sexual precocity, which brings premature age. Modern man was not meant to do his best work before forty but is by nature, and is becoming more and more so, an afternoon and evening worker. The coming superman will begin, not end, his real activity with the advent of the fourth decade. Not only with many personal questions but with most of the harder and more complex problems that affect humanity we rarely come to anything like a masterly grip till the shadows begin to slant eastward, and for a season, which varies greatly with individuals, our powers increase as the shadows lengthen. Thus as the world grows intricate and the stage of apprenticeship necessarily lengthens it becomes increasingly necessary to conserve all those higher powers of man that culminate late, and it is just these that our civilization, that brings such excessive strains to middle

life, now so tends to dwarf, making old age too often *blasé* and *abgelebt*, like the middle ages of those roués who in youth have lived too fast.¹¹

There is practically no consideration of the problems of old age in the modern school. As a matter of fact, one would more than likely be laughed out of court if he attempted to get any substantial consideration of this problem by the preadolescent and adolescent. Although undoubtedly children would not be likely to be highly attentive to lengthy considerations of what they should be doing when they are eighty, the idea of forcing children to give a little thought to their old age has more psychological merit than may appear on the surface. For one thing, the human mind is extremely retentive and sometimes in peculiar ways. For another, periods of stress and necessity frequently call to mind facts and philosophies placed there long ago. A preview of the entire panorama of life in its normal span would make a worthwhile addition to the personal adjustment courses that are becoming increasingly popular in secondary schools.

So far as old age itself is concerned, its tranquillity and happiness probably depend upon some sort of work, play, or hobby which keeps the individual's attention during his entire waking hours away from himself and his own problems. Any person of any age who has nothing to do or is neglecting what he should be doing can magnify and distort out of all proportion problems and ailments from which no human being is completely wanting. The nature of old age and the undue care which is taken by some to insure that old age shall have no duties or work conspire in a peculiar way to accentuate this general human weakness. Common observation is all that is required to prove that it need not be so. A man with the responsibilities of a Charles Evans Hughes can live to an advanced age with scant time to worry about himself. Remember that when Rome, in one of its hours of most dire peril, turned to an old man to save the day, they did not find Cincinnatus at home musing by the fire on his ancient victories but out in the field behind a plow.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

1 • *Project*: Find a table giving increases in school population in the

¹¹ Hall, G. S., *Senescence* (New York: D. Appleton-Century Co., 1922), pp. 29-30.

United States from 1900–1957 and make a graph illustrating the increases.

- 2 • Write a one-page argument for or against the thesis that a major function of the school is the revolutionizing of society.
- 3 • Paraphrase the quotation from Cole and Morgan on physical and mental growth in your own words.
- 4 • Why, do you think, is it so difficult to divide life stages in man into exact periods?
- 5 • What are the advantages, according to Thorndike, of attempting to differentiate behavior into learned and unlearned?
- 6 • The text does not give a formal definition of play. Make one of your own which you are willing to defend, or consult a standard dictionary or psychology text for such a definition.
- 7 • Do you think that the evolution of society will involve more routine for the individual or less?
- 8 • Expand the discussion of each of the phases of child development with some ideas of your own.
- 9 • What do you think is meant by the statement that thinking is done with words?
- 10 • Do you believe that it is possible to increase an individual's fundamental mental capacity? Defend your answer.
- 11 • What are the assumptions stated in the chapter upon which the discussion of delinquency as a problem of child development is based?
- 12 • Summarize the discussion on behavior trends in the preadolescent and the adolescent.

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Abrahamsen, David, "Family Tension, Basic Cause of Criminal Behavior," *Journal of Criminal Law and Criminology*, XL, (September-October, 1949), pp. 330–35.
- Almy, Millic, *Child Development*. New York: Henry Holt, 1955.
- American Council on Education, *Helping Teachers Understand Children*. Washington, D.C.: American Council on Education, 1945.
- Anderson, J. E., "Half Century of Learning about Children," *N.E.A. Journal*, XLII (March, 1953), pp. 139–41.
- , *The Psychology of Development and Personal Adjustment*. New York: Henry Holt, 1949.
- Averill, L. A., *The Psychology of the Elementary School Child*. New York: Longmans, Green, 1949.

- Banham, K. M., "Senescence and the Emotions: A Genetic Theory," *Pedagogical Seminary*, LXXVIII, (June, 1951), pp. 175-83.
- Beverly, B. I., *A Psychology of Growth*. New York: McGraw-Hill, 1948.
- Blair, A. W., and W. H. Burton, *Growth and Development of the Preadolescent*. New York: Appleton-Century-Crofts, 1951.
- Brown, G. T., "Never Too Old to Learn: a Gerontological Experiment in General Education," *School and Society*, LXXIV (November 3, 1951), pp. 279-81.
- Chambers, M. M., and Elaine Exton, *Youth: Key to America's Future*. Washington, D.C.: American Council on Education, 1949.
- Cole, Lucilla, *Psychology of Adolescence*, Fourth Ed. New York: Rinehart, 1954.
- Courtis, S. A., "What is a Growth Cycle?" *Growth*, I (May, 1937), pp. 155-74.
- Cruze, Wendell W., *Adolescent Psychology and Development*. New York: The Ronald Press, 1953.
- Cunningham, Ruth, and Associates, *Understanding Group Behavior of Boys and Girls*. New York: Teachers College, Columbia University, 1951.
- Cutts, N. E., and Nicholas Moseley, *The Only Child: A Guide for Parents and Only Children of All Ages*. New York: Putnam, 1954.
- Davidoff, Eugene, and Elinor S. Noetzel, *The Guidance Approach to Juvenile Delinquency*. New York: Child Care Publications, 1951.
- Davidson, H. H., and L. P. Kruglov, "Personality Characteristics of the Institutionalized Aged," *Journal of Consulting Psychology*, XVI (February, 1952), pp. 5-12.
- Donahue, Wilma T., (compiler), *Education for Later Maturity*. New York: William Morrow, 1955.
- "Experiments in the Education of Older Adults," *Adult Education*, II (December, 1951), pp. 49-59.
- "Trends in Gerontology," *Personnel and Guidance Journal*, XXXI (May, 1953), pp. 505-8.
- et al., "Education for Aging: A Symposium," *Adult Education*, I (December, 1950), pp. 41-79.
- English, H. B., *Child Psychology*. New York: Henry Holt, 1951.
- English, O. S., and S. M. Finch, *Emotional Problems of Growing Up*. Chicago: Science Research Associates, 1951.
- Essert, P. L., et al., "Preparation for a Constructive Approach to Later Maturity," *Teachers College Record*, LIII (November, 1951), pp. 70-76.
- Forest, Ilse, *Child Development*. New York: McGraw-Hill Book Co., 1954.
- Garrison, Karl C., *Growth and Development*. New York: Longmans, Green, 1952.
- *Psychology of Adolescence*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1946.
- Gesell, Arnold, *Infant Development*. New York: Harper & Bros., 1952.

- and F. L. Ilg, *Infant and Child in the Culture of Today*. New York: Harper & Bros., 1943.
- "Some Educational Implications of a Science of Child Development," *Educational Outlook*, XXIV (November, 1949), pp. 2-4.
- Gluckman, R. M., "The Role of Psychiatry in the Understanding and Treatment of Juvenile Delinquency," *Federal Probation*, XV (September, 1951), pp. 25-30.
- Glueck, Sheldon and Eleanor, *Unraveling Juvenile Delinquency*. New York: Commonwealth Fund, 1950.
- Griffiths, Ruth, *The Abilities of Babies*. New York: McGraw-Hill Book Co., 1954.
- Gruenberg, Sidonie M. (ed.) and staff of the Child Study Association of America, *Our Children Today*. New York: Viking Press, 1952.
- Hartley, Ruth E., et al., *Understanding Children's Play*. New York: Columbia University Press, 1952.
- Havighurst, R. J., *Developmental Tasks and Education*, Second Ed. New York: Longmans, Green, 1952.
- *Human Development and Education*. New York: Longmans, Green, 1953.
- and L. L. Janke, "Relations Between Ability and Status in a Mid-western Community," *Journal of Educational Psychology*, XXV (1944), 357-96; XXVI (1945), 499-509.
- and Hilda Taba, *Adolescent Character and Personality*. New York: John Wiley, 1949.
- Heffernan, Helen, (ed.), *Guiding the Young Child*. Boston: D. C. Heath, 1951.
- Hinkleman, E. A., "Comparative Investigations of Differences in Personality Adjustment of Delinquents and Non-delinquents," *Journal of Educational Research* XI.VI (April, 1953), pp. 595-601.
- Horn, J. L., *The Education of Your Child*. Stanford, Cal.: Stanford University Press, 1939.
- Hurlock, Elizabeth B., *Adolescent Development*. New York: McGraw-Hill Book Co., 1949.
- *Child Growth and Development*. New York: McGraw-Hill Book Co., 1949.
- *Developmental Psychology*. New York: McGraw-Hill Book Co., 1953.
- Hymes, J. L., *A Child Development Point of View*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- *Teacher Listen: The Children Speak*. New York: New York Committee on Mental Health of the State Charities Aid Association, 1949.
- Jenkins, Gladys G., et al., *These Are Your Children*. Chicago: Scott, Foresman and Company, 1949.
- Jersild, A. T., *Child Psychology*, Fourth Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954.

- . *In Search of Self*. New York: Bureau of Publications, Teachers College, Columbia University, 1952.
- Jones, Harold E., *Development in Adolescence*. New York: Appleton-Century-Crofts, 1943.
- Knapp, Robert H., and J. J. Greenbaum, *The Younger American Scholar: His Collegiate Origins*. Chicago: University of Chicago Press, 1953.
- Krugman, Morris, "Education's Debt to Orthopsychiatry," *American Journal of Orthopsychiatry*, XXIII (July, 1953), pp. 445-53.
- Kuhlen, Raymond G., and George G. Thompson (eds.), *Psychological Studies of Human Development*. New York: Appleton-Century-Crofts, 1952.
- Kuhlen, Raymond G., *The Psychology of Adolescent Development*. New York: Harper & Bros., 1952.
- Kvaraceus, William C., *The Community and the Delinquent*. New York: World Book Co., 1954.
- Laird, D. A., *The Strategy of Handling Children*. New York: Funk and Wagnalls, 1949.
- Landis, P. H., *Adolescence and Youth*. New York: McGraw-Hill Book Co., 1945.
- Laue, Gilbert, *So Much to Learn*. New York: Henry Holt, 1953.
- Lebo, D., "Some Factors Said to Make for Happiness in Old Age," *Journal of Clinical Psychology*, IX (October, 1953), pp. 385-87.
- Lee, J. M. and Doris M., *The Child and His Curriculum*, Second Ed. New York: Appleton-Century-Crofts, 1950.
- Lehman, Harvey C., *Age and Achievement*. Princeton: Princeton University Press, 1953.
- Malm, Marguerite, and O. G. Jamison, *Adolescence*. New York: McGraw-Hill Book Co., 1952.
- Martin, W. E., and C. B. Stendler (eds.), *Readings in Child Development*. New York: Harcourt-Brace, 1954.
- Mead, Margaret, "Technological Change and Child Development," *Understanding the Child*, XXI (October, 1952), pp. 111.
- Merrill, Maud A., *Problems of Child Delinquency*. Boston: Houghton Mifflin, 1947.
- Merry, F. K. and R. V., *The First Two Decades of Life*. A revision and extension of *From Infancy to Adolescence*. New York: Harpers & Bros., 1950.
- Millard, Cecil V., *School and Child: A Case History*. East Lansing, Michigan: Michigan State College Press, 1954.
- Mitchell, Lucy Sprague, *Our Children and Our Schools*. New York: Simon and Shuster, 1950.
- National Conference on Prevention and Control of Juvenile Delinquency, *Report on School and Teacher Responsibilities*. Washington, D.C.: U. S. Government Printing Office, 1947.
- National Education Association, Research Division, "Schools Help Prevent

- Delinquency," *Research Bulletin*, XXXI, No. 3. Washington, D.C.: The Association, October, 1953.
- National Society for the Study of Education. *Juvenile Delinquency and the Schools*, Forty-seventh Yearbook, Part I. Chicago: University of Chicago Press, 1948.
- *Child Development and the Curriculum*, Thirty-eighth Yearbook, Part I. Bloomington, Illinois: Public School Publishing Co., 1939.
- Olson, Willard C., *Child Development*. Boston: D. C. Heath, 1949.
- Pan, J. S., "Institutional and Personal Adjustment in Old Age," *Journal of Genetic Psychology*, LXXXV (September, 1954), pp. 155-58.
- "Personal Difficulties and Dissatisfactions of Old People," *Journal of Educational Sociology*, XXV (March, 1952), pp. 423-31.
- Peck, Leigh, *Child Psychology: A Dynamic Approach*. Boston: D. C. Heath, 1953.
- Rand, Winifred, et al., *Growth and Development of the Young Child*, Fifth Ed. Philadelphia: W. B. Saunders, 1953.
- Rasey, Marie I., *Toward Maturity*. New York: Hinds, Hayden, and Eldredge, 1947.
- Reals, W. H., "Education of the Aging," *Journal of Higher Education*, XXIV (June, 1953), pp. 320-22.
- Reiss, Albert J., "Social Correlates of Psychological Types of Delinquency," *American Sociological Review*, XVII (1952), pp. 710-18.
- Richards, Edward A., (gen. ed.), *Proceedings of the Midcentury White House Conference on Children and Youth*. Raleigh, N.C.: Health Publications Institute, 1950.
- Rohrbaugh, L. H., and M. D. Ring, "Higher Education and the Aging Population," *Higher Education*, VIII (March 1, 1952), pp. 149-52.
- Ross, Mabel, "Emotional Aspects of Juvenile Delinquency," *Federal Probation*, XV (September, 1951), pp. 12-14.
- Rothney, John W. M., *The High School Student*. New York: The Dryden Press, 1953.
- Schoeppe, Aileen, and Robert J. Havighurst, "A Validation of Developmental and Adjustment Hypotheses of Adolescence," *Journal of Educational Psychology*, XLIII (1952), pp. 339-53.
- Sears, R. R., et al., "Some Child-Rearing Antecedents of Aggression and Dependency in Young Children," *Genetic Psychology Monographs*, XLVII, Second Half (May, 1953), pp. 137-236.
- Shuttleworth, Frank K., *The Physical and Mental Growth of Girls and Boys Age Six to Nineteen in Relation to Age at Maximum Growth*. Washington, D.C.: Society for Research in Child Development, National Research Council, 1939.
- Schuessler, Karl F., and D. R. Cressey, "Personality Characteristics of Criminals," *American Journal of Sociology*, LV (March, 1950), pp. 476-84.

- Sheehy, Emma Dickson, *The Fives and Sixes Go to School*. New York: Henry Holt, 1954.
- Strang, Ruth M., *An Introduction to Child Study*, Third Ed. (New York: The Macmillan Co., 1951.
- Symonds, P. M., *The Dynamics of Parent-Child Relationships*. New York: Bureau of Publications, Teachers College, Columbia University, 1949.
- Tappan, Paul W., *Juvenile Delinquency*. New York: McGraw-Hill Book Co., 1949.
- Thompson, George G., *Child Psychology*. Boston: Houghton Mifflin, 1952.
- Torgerson, Theodore L., *Studying Children*. New York: The Dryden Press, 1947.
- Tuckman, J., and I. Lorge, "Effect of Changed Directions on the Attitudes About Old People and the Older Worker," *Educational and Psychological Monographs*, XIII, No. 4 (1953), pp. 607-13.
- Tyler, Fred C., "Concepts of Organismic Growth: A Critique," *Journal of Educational Psychology*, XLIV (October, 1953), pp. 321-42.
- Tyson, R., "Adjusting to Old Age," *Journal of Clinical Psychology*, VI (January, 1951), pp. 79-86.
- Wattenberg, W. W., "Factors Associated with Repeating among Pre-adolescent Delinquents," *Journal of Genetic Psychology*, LXXXIV (June, 1954), pp. 189-95.
- Whiting, John W. M., and Irvin L. Child, *Child Training and Personality: A Cross-Cultural Study*. New Haven, Connecticut: Yale University Press, 1953.
- Wolff, Werner, *The Personality of the Preschool Child*. New York: Grune and Stratton, 1947.
- Young, Leontine R., "We Call them Delinquents," *Federal Probation*, XV, (December, 1951), pp. 8-12.

5

INTELLIGENCE AND APTITUDE: THEIR NATURE, DEVELOPMENT, AND MEASUREMENT

During the past three or four decades education has been deeply influenced and appreciably enriched by the measurement movement. In the early stages of this development, enthusiasts made many extreme statements and unwarranted claims, which led at times to an unjustifiable emphasis on objective procedures. But, despite such limitations, the movement stimulated experimentation and brought a general realization of the nature and extent of individual differences in children's abilities and aptitudes. Through a widespread dissemination of the results of objective tests, teachers were led to recognize their responsibility for providing a diversified educational program of activities and experiences chosen to suit the varied abilities within every class.

The awareness of individual differences led to many other changes in school practice. For example, objective testing focused attention upon *extreme* deviates. The slow-learning, the gifted, and other types of children came to be understood and treated more adequately. Educators soon recognized that objective measurement occupied an important place in guidance programs too. And, as research data grew more abundant, they discovered the limitations as well as the values of the objective approach. It became clear that the typical intelligence test measured only one aspect of the child's development, and that adequate understanding and effective guidance depended upon the use and interpretation of many other types of data. Therefore, students undertook to develop additional tests to measure talents and aptitudes.

History of Intelligence Testing

Standard testing arose from laboratory investigations and observations. In Germany, scientists directed attention to the measurement of reaction time, and other relatively simple abilities and functions. The first psychological laboratory was established in the latter part of the nineteenth century.

About this time, important related findings were reported in other countries. In England, the work of Sir Francis Galton was perhaps the most significant. Although Galton did not make an intelligence test, he made many suggestions relevant to test construction. He observed that such a test could be made, and that its use would doubtless disclose large individual differences. Some persons would exhibit extraordinary brightness; others would show very little ability; and most would tend to cluster rather closely around the average. During this period, tests were being developed by other workers. In America as early as 1890, J. McK. Cattell published a volume entitled *Mental Tests and Measurements*. In it he described tests of single abilities such as sensation, reaction time, and speed of movement. In some pioneer work, there was reflected the belief that intelligent behavior was simply the combined operations of such separate processes or abilities.

Alfred Binet was led to reject this hypothesis, for his studies of memory, attention, and adaptation led him to believe that these factors operated in inseparable combinations; he discovered that the unity or character of the whole pattern was frequently destroyed or altered by attempts to measure each component. Hence, he believed that intelligence could be most reliably observed in activities that called for the combined activity of the various factors. He assembled and arranged in order of difficulty the typical reactions of children, young people, and adults. From the reports of parents and from observations, Binet, working with the French physician, Simon, developed a list of the everyday experiences and behavior of boys and girls. Finally after considerable experimentation, these items were arranged in an age scale from three to 14 years. Through the use of this scale, it was possible to state crudely a child's intelligence level. If a child of 12 (or of any other age) responded in a manner typical of the seven-year-old child, he was judged to be seven years of age mentally. If a child of seven years passed the tests in a manner typical of the 12-year-old child, he was said to have a mental age of 12 years.

The Binet-Simon tests met a varied reception: some persons objected to the concept of intelligence underlying them; others endorsed the tests enthusiastically. But the method was adopted by many workers. H. H. Goddard brought the tests to America, published a revision as early as 1911, and soon demonstrated their value in school work. Although many workers played significant roles in the development of objective testing, it was L. M. Terman who demonstrated best the possibilities in the movement.

In 1916 the Stanford Revision of the Binet-Simon tests appeared;¹ Terman and his colleagues had spent five years in its construction and standardization. For each of years three to ten inclusive, there are six tests. Eight tests are provided for year 12; and six tests for years 14, 16, and 18. The tests utilize situations and experiences known to typical American children. For example, the child who succeeds in tests at the three-year level will identify certain objects (such as a watch and a pencil); he will give his name; and he will point to parts of his body. Although the three-year-old child usually will *enumerate* objects in a picture, the seven-year-old child will *describe* the picture, and the 12-year-old will *interpret* it. These illustrations reveal two characteristics of the revision: (1) its reliance in the measurement of intelligence upon the use of general experience and information; and (2) its attempt to designate *levels* of ability through situations demanding different reactions at different age levels. In giving the tests, the examiner locates the year level at which the child passes *all* items; and the testing is continued until the child fails in all tests in a particular age group. In this way, *range* and *level* of intelligence are gauged. Terman made several important alterations. He refined the method, added several tests, utilized the mental age concept, and applied Stern's proposal for calculating the I.Q. (Intelligence Quotient).

The I.Q. is obtained by dividing the mental age in months by the child's chronological age in months and multiplying by 100. Thus:

$$\text{I.Q.} = \frac{\text{MA}}{\text{CA}} \times 100$$

The Stanford-Binet Test is employed in this way. A *basal* year is

¹ This revision was accompanied by L. M. Terman's *Measurement of Intelligence* (Boston: Houghton Mifflin Company, 1916), which gave a complete description of the test as well as directions for administering and scoring it.

established as the year on the scale in which the child passes all the test-items. For example, John, eight years two months of age, passes all items in the eight year group; he fails two items in year nine; four in year ten, and all items in year eleven. The examiner continues testing until the child has reached a level at which he fails all tests, or until all tests are administered. The examiner gives credit for the basal age, eight years, and adds all the other scores to the basal age. Two months credit is given for each item correctly passed. John's mental age is:

	M.A. in months
Basal age (8 years, 2 months)	96
4 items in year 9 (2 months each)	8
2 items in year 10	4
0 in year 11	
	<hr/>
	108

Since John is 8 years, 2 months of age, this chronological age is expressed as 98 months. John's I.Q. is calculated by dividing his M.A. by his C.A.

$$\text{I.Q.} = \frac{108}{98} \text{ or } 1.10 \times 100 = 110$$

This revision appeared in 1916. It was widely used in our schools, and was generally accepted as a necessary instrument in child study. Lewis M. Terman continued his experimentation with this approach. In 1937, in collaboration with Maud M. Merrill, he issued another revision.² Among the significant features of this revision are: extension of the scale to include children as young as two years of age; the construction of more reliable tests for ages three to five; the improvement of the adult tests; and the development of a second form that makes it possible to offset practice effects in retesting children.

Most individual intelligence tests have been devised primarily for use with children and youth. To meet the need for an adult test, David Wechsler, in 1944, presented the Wechsler-Bellevue Intelligence Scale: A Semi-Performance Scale to measure the ability of persons from ten to 60 years of age. Wechsler is cautious in interpreting mental age, since he believes that intelligence tests measure "different

² Terman, L. M., and M. M. Merrill, *Measuring Intelligence* (Boston: Houghton-Mifflin, 1937).

portions" of intelligence at different ages. Moreover, a mental age of 12 years for a child of 12 is not the equivalent of a mental age of 12 years for an adult 30 years of age.³ This fact is provided for in the scoring of the test according to the child's standing in each age group.

Wechsler's full scale consists of five verbal tests, five performance tests, and a vocabulary test which can be used as an alternate. Similar subtests are grouped together and arranged according to difficulty; for example, tests involving the repetition of digits. (In the Stanford-Binet test, these tests are distributed over different age levels.) The grouping of like items is considered by some examiners to be advantageous in saving time and in facilitating analysis of the types of ability displayed by the subject. Another advantage claimed for the Wechsler test is that the subject is given credit for every success by means of a point scale; in the Stanford-Binet test the child who responds correctly to one or two items but fails on a third item of some tests is given no more credit than the child who fails all three of the required items. The Wechsler test yields three quotients, one derived from the verbal tests; one from the performance scale; and one from the combined examinations.

In 1949, the Wechsler Intelligence Scale for Children appeared, distinct from the earlier test, and standardized independently. It may be used with subjects whose ages range from five years to adolescence. The two Wechsler tests overlap; either can be used with adolescents. The Wechsler Intelligence Scale for Children consists of five verbal and five nonverbal tests with two alternative tests, one verbal and one nonverbal. Three scores and three quotients are obtained.

Group Tests of Intelligence

The foregoing tests are individual in nature; to administer them special training and understanding are required on the part of the examiner, and considerable time is utilized in testing each subject. Group tests, therefore, have been devised for situations in which time, money, and lack of trained examiners preclude individual testing of children. The group tests can be administered to varying numbers of persons, for example, a dozen five-year-old children or one hundred or more cooperative young people. The examiner needs little

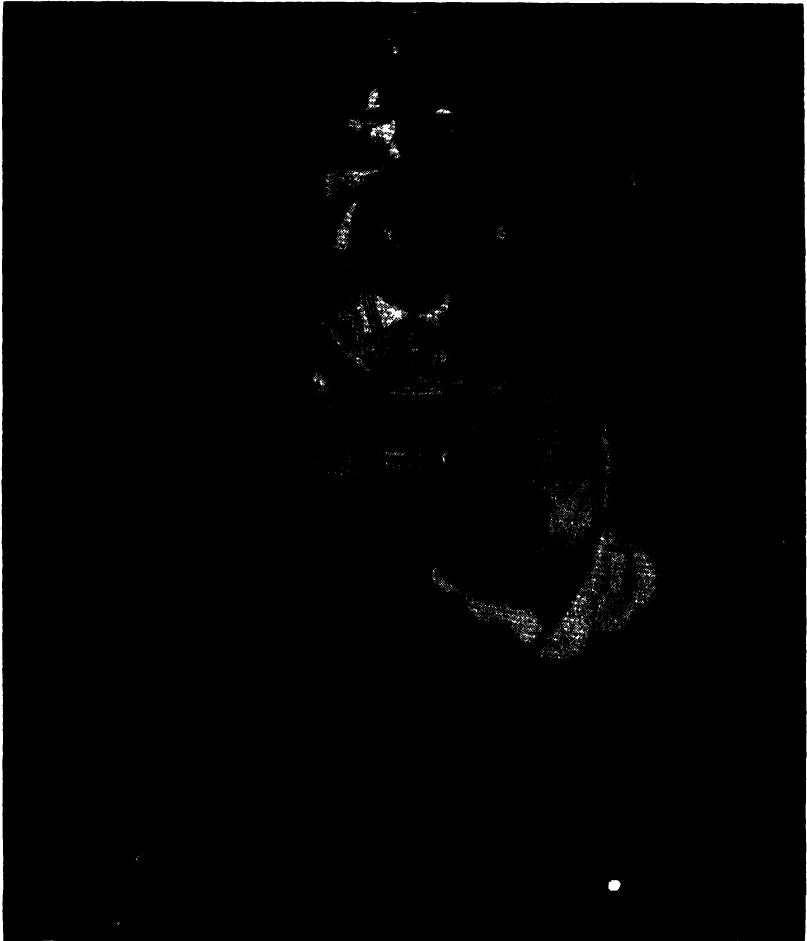
³ Wechsler, David, *The Measurement of Adult Intelligence*, Third Ed. (Baltimore: The Williams and Wilkins Co., 1944), p. 12. A revision of the Wechsler test appeared in 1955; the *Wechsler Adult Intelligence Scale*, copyright 1955, New York: The Psychological Corporation.

training, since precise directions for giving and scoring accompany test materials. Characteristic items in these tests include: completion of sentences, completion of number series, general information inquiry, arithmetic problems, analogies, vocabulary and memory. A list of tests with information about each test is found in a table at the end of this chapter.

Group tests of intelligence came into popular use after the Army Alpha group intelligence test had proved of value in classifying soldiers for various kinds of work during World War I. Group tests were later employed for diagnosing children's abilities, for classifying children, and for predicting their development. Gradually, the content of group tests was modified and extended. Some tests were constructed so as to include tasks which required little reading ability or proficiency in language. These nonverbal tests were particularly helpful in studying children having language limitations or reading deficiencies. Other group tests, which included both performance and verbal items, came to be looked upon as having greater validity than the purely verbal test. The Kuhlmann-Anderson Intelligence Scale is an example of a test which utilizes both types of test items. This scale is designed for pupils of the elementary grades and high school. The entire battery includes 39 sub-tests; all except two booklets contain ten tests each. The tests overlap from grade to grade. The materials for tests for grades one and two are largely nonverbal. The tests for the advancing grades increase in difficulty and include a larger number of problems that require verbal ability. The results of each sub-test can be converted into a mental age. A median mental age may be obtained from the ten mental ages derived for each grade-level test. The median mental age may then be translated into an I.Q. The tests are popular and have been effectively used in public schools.⁴

Most group tests have been constructed on the theory that intelligence is a general ability. Two rather recently developed tests, however, the California Tests of Mental Maturity and the Chicago Primary Mental Abilities Test, have been built on the theory that intelligence includes many relatively independent factors. The California Tests of Mental Maturity are designed for use at five levels:

⁴ Kuhlmann-Anderson Intelligence Tests, Sixth Ed. (1927-1952). Test booklets are provided on nine levels for the following grades: Kgn. 1, 2, 3, 4, 5, 6, 7-8, and 9-12. Princeton, New Jersey: Personnel Press, Inc., 1952.



These children appear to enjoy taking this test. (Board of Education City of New York.)

Pre-Primary, Primary, Elementary, Intermediate, and Advanced. The factors tested are visual acuity, auditory acuity, motor coordination, memory, spatial relationships, reasoning, and vocabulary. For each factor a mental age rank is found; a mental age rank is also obtained for Total Mental Factors, for Language Factors, and for Non-Language Factors. Some critics have asserted that the validity of these widely used tests has not been satisfactorily established.⁵

⁵ Freeman, Frank S., *Theory and Practice of Psychological Testing* (New

The S.R.A. Primary Mental Abilities Tests were developed by L. L. Thurstone and his associates following experimentation to reveal primary mental abilities. Various editions and forms of the tests are designed to measure different combinations of the "primary mental abilities:" Number, Verbal Meaning, Space, Word Fluency, Reasoning, Perceptual Speed, and Motor. Since these "primary" factors were found to be positively intercorrelated, the makers of the test conclude that a "second-order factor" may account for the intercorrelations.⁶ A "factor age" and a "factor quotient" are obtained for each of the primary mental abilities tested. The tests have been devised for three levels: for ages five to seven, for ages seven to eleven, and for ages eleven to seventeen. Only five factors are covered at each level.

The Thurstone tests are designed to measure both general and specific traits. The following ingenious diagram shows the coefficients of correlation between each of the specific traits and general ability.⁷

The concept of intelligence as well as the procedures advanced by the Thurstones have provided the basis for much criticism. Although some critics are extremely skeptical of the value of the approach, others view the work as an important step in the development of intelligence tests, as well as a significant effort in studying aptitudes. For example, L. J. Bischof writes:

The I.Q. does have value in that it can give an over-all idea of intellectual ability, and it has existed long enough to be generally understood by the public at large. Nevertheless it conceals more than it reveals. It labels more than it enlightens. It is becoming a historic method of indicating intelligence. To replace this method let us turn our attention to the use and importance of the theory of primary mental abilities. . . .

Educational and vocational guidance would be unnecessarily difficult if it did not utilize the primary-mental-abilities approach. It would be difficult for the counselor to aid the client in making choices for educational goals without some indications of the varying capacities each client possesses. Likewise, choosing our best vocational possibility requires knowledge of what types of abilities we possess most of. The concept of primary

York: Henry Holt and Co., Inc., 1950), p. 216. See also Laurance F. Shaffer, "Review of the California Test of Mental Maturity, 1950 S-Form," *Journal of Consulting Psychology*, XV, (December, 1951), p. 516.

⁶ Byrne, Katharine M., "Testing of Primary Mental Abilities," as told to Katharine M. Byrne by Thelma G. Thurstone, *NEA Journal*, Vol. XXXIX (May, 1950).

⁷ *Intelligence: Statistical Concepts of Its Nature* by L. J. Bischof, copyright 1954, by permission of Random House, Inc.

mental abilities enables us to determine the *quality* of mental ability as well as the *quantity*.⁸

The student who reads this chapter may be confused by the use of the terms *intelligence* and *mental ability*. Modern texts usually employ the terms *intelligence* and *mental ability* almost synony-

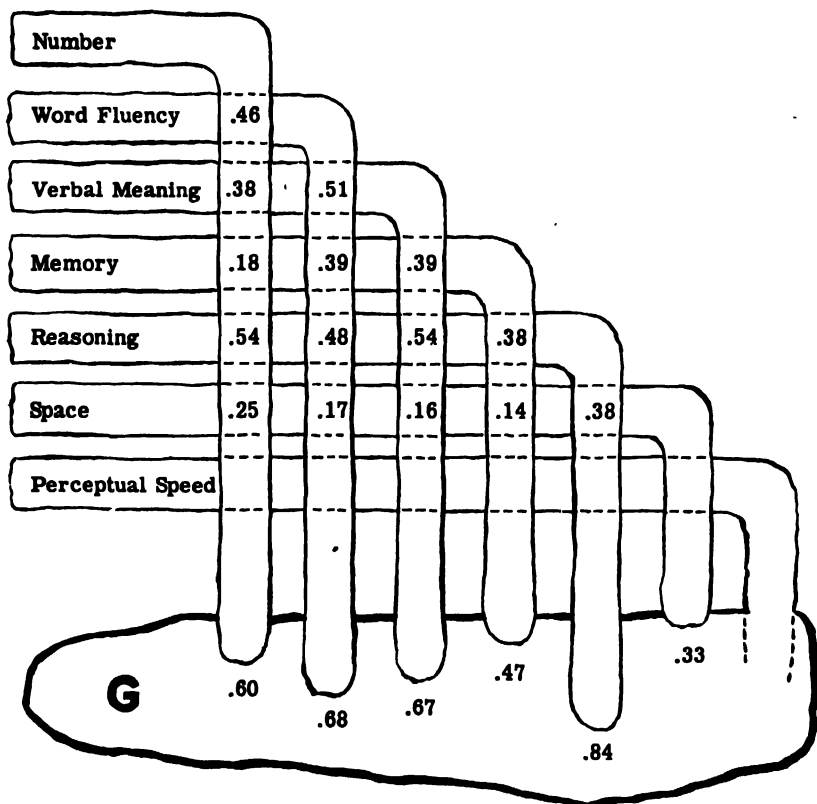


Fig. 1. The coefficients of correlation between certain primary mental abilities and general ability. (After Thurstone.)

mously to designate performance on an intelligence test. *Mental age* is used, as previously indicated, to refer to the norm-equivalent on a test. To avoid confusion, it might be well to think of the term intel-

⁸ Bischof, L. J., *Intelligence: Statistical Conceptions of Its Nature*, op. cit. p. 19.

ligence as test-intelligence, since we are discussing the results of tests. Similar distinctions are made by many writers. For example, Stagner and Karwoski state:

Psychologists have offered various definitions of intelligence. Generally, these have simply focused on different kinds of performance: learning ability, ability to manipulate abstract symbols, ability to use learning in new situations, ability to solve problems. These definitions simply point to some of the different manifestations; and, indeed, the easiest way to learn what psychologists mean by "intelligence" is to look at some of the devices for its measurement. . . .

Learning is a function which we find in all human beings, but there is an enormous range of speed and complexity of learning possible. At the lower extreme we have some feeble-minded cases who at maturity have not yet learned the acts normal to a child of two years. At the upper extreme we have persons who deal with fabulously complex abstract functions such as nuclear physics, biochemistry, or the philosophy of society. This dimension of ability which corresponds more or less to what we call intelligence, is of especially great importance.⁹

Inheritance of Mental Ability

Is intelligence inherited? This question is still unanswered, although it has been a subject of study for many years. Present-day investigators have used the following means in obtaining relevant data: the correlation technique, family history studies, co-twin control procedures, and foster-children experiments.

The first technique involves ascertaining the correlation between intelligence test scores for groups of individuals of differing degrees of blood relationship. The following coefficients are representative of these investigations. One writer reports a coefficient of $+0.9$ between the intelligence test scores of identical twins, while less resemblance is reflected in a coefficient of $+0.6$ for fraternal twins. Between the test scores of typical pairs of brothers and sisters, $+0.5$ is reported; for cousins, $+0.25$; and for parents and offspring, $+0.4$.¹⁰ Thus, increase in amount of blood relationship is associated with increased similarity

⁹ Stagner, Ross, and T. F. Karwoski, *Psychology* (New York: McGraw-Hill Book Co., 1952), pp. 424-425 and 422.

¹⁰ Freeman, F. N., et al., "Influence of Environment on the Intelligence, School Achievement, and Conduct of Foster-Children," *Twenty-Seventh Yearbook*, National Society for the Study of Education (Bloomington, Ill.: Public School Publishing Co., 1928). Part I. Whipple, C. M. (ed.), "Nature and Nurture, Their Influence upon Intelligence," *Twenty-Seventh Yearbook*, National Society for the Study of Education (Bloomington, Ill.: Public School Publishing Co., 1928), Part I.

in intelligence test scores. This condition is alleged by some to show that by the side of heredity, all other factors are "dwarfed in comparison." However, such relationships do not reliably reveal the superior significance and influence of hereditary factors, since, as blood relationship increases, so do the frequency and probable strength of environmental factors. When two complex factors such as heredity and environment are studied, it is almost impossible to control a sufficiently large number of variables to enable one to state which factor is operative. Therefore, nearly all studies of nature-nurture, including correlation experiments, enable the proponents of each group to find a causal relationship.

The results of another approach in the nature-nurture controversy may be similarly interpreted. Writers have presented imposing arrays of statistics showing the frequency with which mental superiority, anomaly, or defect persists in related stocks. The Kallikak and the Jukes families are often used to illustrate the persistence of undesirable characteristics, while the Edwards family is introduced to show that superiority tends to recur in other families. In the case of the Kallikaks:

Two family lines established by a soldier in the Revolutionary War were compared. One line established by a feeble-minded woman contained 480 direct descendants, among which only 46 normal individuals were found. Among 496 direct descendants of the line established by a normal woman, all were normal with the exception of five.¹¹

The high frequency of superior persons in certain families has been cited again and again. Interesting here is the work of L. M. Terman who found that of 62 members in the Hall of Fame, 22½ per cent were related to 643 gifted children identified and studied in California.¹² This finding leads one to recall Sir Francis Galton's famous analysis of 977 men of genius who were found to have 535 eminent relatives, while 977 average men had but four relatives who were eminent.¹³ These data, and those recently obtained in anthropological studies, demonstrate the fact that a relationship exists between family status and the attainment of eminence. They do not, however,

¹¹ Whipple, G. M., *op. cit.*, p. 266. Quoted by permission of the Society.

¹² Terman, L. M., et al., *Genetic Studies of Genius: I. Mental and Physical Traits of a Thousand Gifted Children* (Palo Alto, Cal.: Stanford University Press, 1925).

¹³ Galton, F., *Hereditary Genius: An Inquiry into Its Laws and Consequences* (New York: The Macmillan Co., 1892), new ed. 1914.

present an especially strong case for the superiority of heredity over environment, since both Terman's and Galton's groups consist of individuals coming typically from stimulating and superior homes wherein ability is undoubtedly nourished.

A promising method of studying heredity was developed by Arnold Gesell. It is of unusual significance because of his technique—that of co-twin control. The development of identical twins was found to be so similar in emotional expression, in mental growth, and in certain motor acquisitions (such as stair-climbing) that Gesell concluded that environmental stimulation could not possibly explain the striking correspondence. Remarkable likeness persisted even when one twin member had undergone special training in stair-climbing, and another in vocabulary development. Regarding the vocabulary study, L. C. Strayer, working with Gesell, wrote: "The twins were subaverage mentally and not all the special training was able to bring them up to the average vocabulary of children three and one-half months younger than they."¹⁴ It appeared, therefore, that "inner growth" or "maturation" sets levels which special training did not enable children to transcend.

Although Gesell's results are extremely interesting, they must be viewed with reservation, since they are based upon observation of a small number of cases studied for a short time. A related question arises: What differences in intelligence appear in identical twins reared for many years in decidedly different environs?

One writer reports the records of ten pairs of identical twins reared apart from birth or from infancy and brought together and studied at maturity. In six pairs, no significant difference in test-intelligence was noted; in two pairs, twelve-point differences in intelligence quotients are cited; and the remainder differ by fifteen or seventeen points.¹⁵

It is clear that these investigations are subject to several interpretations. Some students find in them support for their views on the importance of environment, while others assert that they show that intelligence is to a large extent an inborn, unchangeable ability. The writer is inclined to agree with the following:

¹⁴ Strayer, L. C., "Language and Growth: The Relative Efficacy of Early and Deferred Vocabulary Training. Studied by Method of the Co-Twin Control," *Genetic Psychology Monographs*, Vol. VII, No. 3 (Worcester, Mass.: Clark University Press, 1930), pp. 209-317.

¹⁵ Schwesinger, G. C., *Heredity and Environment* (New York: The Macmillan Co., 1933), p. 230.

As has been noted regarding other psychological functions, it is futile to ask which determines intelligence, heredity or environment? In every case, the IQ is a function of both heredity and environment. Without heredity there would be no organism to be acted upon by external stimulation; without environment the organism would die. It is foolish to ascribe everything to nature (genes and chromosomes) or to nurture (home, school, etc.) Always the two are in interaction. . . .

Yet these writers state:

Heredity contributes more to individual differences in intelligence than does environment. However, there appears to be little cause for alarm as to a possible lowering of the national intelligence as a result of excessive reproduction by parents of low mental level. So far, favorable education and other influences seem to be raising the intellectual average more than this alleged hereditary differential is lowering it.¹⁶

It is clear that intelligence tests are not measures of inborn intelligence, since they depend upon the child's reactions primarily to learned materials. They do not test directly the child's inherited ability. However, intelligence tests have proved very useful in our efforts in school to understand children and to guide and, within limits, to predict their development. Perhaps such tests would be more accurately labelled learning tests. However, they have a broader function than simply to predict success in school. For they have proved helpful in showing the ability of human beings to adjust to many situations. As A. M. Jordan states:

Unfortunately it is impossible to get any accurate measure of an individual's *inherited* intellectual capacity. The best we can do is to use scores from intelligence tests as indications of a child's intellectual advancement. The question actually, then, is not "does environment change substantially an individual's inherited intelligence?" but rather the question has resolved itself into: "Does environment change substantially an individual's 'I.Q.'?"

The chief quarrel among psychologists now is not *whether* the I.Q. changes but as to the *amount* of the change. Some hold that the change is moderate, say, 5-10 points; others say that under very unusual circumstances the I.Q. may be raised 35-40 points.¹⁷

THE STABILITY OF THE I.Q.

Closely related to the foregoing discussion is the controversy con-

¹⁶ Stagner, Ross, and T. F. Karwoski, *Psychology* (New York: McGraw-Hill Book Co., 1952), pp. 450, 464.

¹⁷ Jordan, A. M., *Educational Psychology*, Fourth Ed. (New York: Henry Holt and Co., 1956), p. 45.

cerning the stability of the I.Q. One of the most frequently quoted studies was designed to show the effects of different types of environment on the intelligence of foster children. According to this study:

The maximal contribution of the best home environment to intelligence is apparently about 20 I.Q. points, or less, and almost surely lies between 10 and 30 points. Conversely, the least cultured, least stimulating kind of American home environment may depress the I.Q. as much as 20 I.Q. points. But situations as extreme as either of these probably occur only once or twice in a thousand times in American communities.¹⁸

The foregoing statements have been rather widely accepted by school people, who have accepted the thesis also that the cause of the constancy of the I.Q. is largely hereditary, that by the side of heredity all other factors are "dwarfed in comparison." These statements have tended to give support to extreme claims such as the following which were rather widely accepted in the early years of intelligence testing:

We can only say that the I.Q. is certainly constant within narrow margins. . . .

Psychologists no longer doubt that it is now possible to predict when a child is six years old, what his relative position will be in the total range of intellects when he is sixteen.¹⁹

Again and again, it has been shown that changes of large magnitude occur much more frequently than one would assume from the foregoing statements.²⁰ Large shifts in I.Q. have been reported repeatedly; moreover, gains have been reported at different levels, including college, wherein, to quote R. L. Thorndike: "These studies have agreed in finding that those students who remain through a college course tend to gain in intelligence score."²¹ In addition, it has been pointed out that the interval between test and retest influences the accuracy of prediction.

These data tend to support this conclusion: "The fact that rates

¹⁸ Burks, Barbara S., "The Relative Influence of Nature and Nurture upon Mental Development," *Twenty-Seventh Yearbook*, National Society for the Study of Education, *Nature and Nurture* (Chicago: University of Chicago Press, 1928), Part I, Chapter X, p. 309. Quoted by permission of the Society.

¹⁹ Hollingworth, L. S., *Gifted Children* (New York: The Macmillan Co., 1926), pp. 156, 158.

²⁰ Stoddard, G. D., "Intellectual Development of the Child: An Answer to the Critics of the Iowa Studies," *School and Society*, Vol. LI (April 27, 1940), p. 531.

²¹ Thorndike, R. L., "Constancy of the I.Q.," *Psychological Bulletin*, Vol. XXXVII (March, 1940), p. 168.

of growth in mental abilities are variable is now well established by the studies of various investigators. In addition to the studies on our group there are such studies as Honzik's covering the ages 21 to 72 months; Freeman and Flory's, for ages 8 through 17 years; and Wellman's, from pre-school to college."²² The foregoing observation concerning the variability of the I.Q. is based upon the data for groups as well as upon case-studies.

An investigation by Nancy Bayley dealt with tests and retests of children during the first three years of life. The same children were given several individual intelligence tests at regular intervals until they were nine years of age.

The I.Q. changes evidenced by these children are of particular interest because the children have all had a high degree of testing experience under relatively constant conditions. Because such experiences should reduce spurious variations to a minimum, smaller than usual I.Q. changes might be expected. Actually, the changes seem, in many respects, to be similar to those of other studies . . . a fourth of the group changes 10 or more I.Q. points on retests made one year after the initial test; while an equal number change 17 or more I.Q. points over a three-year interval.²³

These studies lead us to modify a rather prevalent concept about the extreme constancy of the I.Q. Since these studies suggest that alterations in I.Q. occur at every age level, it would seem best not to attempt to predict future development of children from the results of a single intelligence test.²⁴ If this information is used with other findings about child development, it will enable a teacher to offer the child guidance and counsel that are valuable. But it cannot be too strongly emphasized that individual development is often variable. This fact is well illustrated in the work of Bayley, who states:

When we consider the growth curves of individual children we are often

²² Bayley N., "Factors Influencing the Growth of Intelligence in Young Children," *Thirty-Ninth Yearbook*, National Society for the Study of Education (Bloomington, Illinois: Public School Publishing Company, 1940). Part II, p. 77. See also N. Bayley and M. Oden, "The Maintenance of Intellectual Ability in Gifted Adults," *Journal of Gerontology*, Vol. 10 (Jan., 1955), pp. 91-107.

²³ Bayley, N., "Mental Growth in Young Children," *Thirty-Ninth Yearbook*, National Society for the Study of Education (Bloomington, Illinois: Public School Publishing Co., 1940), Part II, pp. 18-20. Quoted by permission of the Society.

²⁴ For an excellent summary, see the *Psychological Bulletin* (March, 1940), and C. L. Nemzck, "The Constancy of the I.Q.," *Psychological Bulletin*, Vol. XXX (1933), pp. 143-67.

impressed with the gradual shift in test scores over a period of years. A striking case is that of Mark. Though he made the highest score of any child in the group at one month of age, he never made such a high score again, but at each successive test made a score nearer the average, until at one year of age his score had dropped to the group norm, and by the time he was two years old he was in the lowest one-fourth of the group. He remained in this relative position until he was seven years old, when his rate of growth seemed to change, and since then his scores have risen steadily, as we see in the record of his Stanford-Binet I.Q.'s. At nine years his I.Q. was 117, at ten years, 122, and at eleven years, 130. Gerald, who was the brightest six-month-old has shown consistently slow growth since that age, and his nine, ten, and eleven year tests yielded I.Q.'s of 85, 84, and 76 respectively. Charles, on the other hand, improved from a score in the twenty-fifth percentile at one year to average at four years, and his Stanford-Binet I.Q.'s for years nine, ten, and eleven are 146, 149, and 153. (These last scores are in the ninety-ninth percentile for Stanford-Binet norms.)²⁵

The I.Q. is a helpful measure in diagnosis, but it should be cautiously employed.

Distribution of Intelligence

Test scores for school children have been found to be distributed roughly according to the normal probability curve. In the early studies, the majority of the population was found in the intelligence quotient interval 90-110. This large group was referred to as "normal" or "average," because they represented best the typical school child. Consideration of the test scores indicated that fewer cases appeared at the upper end of the distribution curve. Thus, at I.Q. 125 and above, approximately 3 per cent were found, while only 1 per cent (the gifted) reached or exceeded I.Q. 130. At the other end of the distribution curve, fewer and fewer children were found as scores became lower.

Similar distributions of test scores have been found in children of different age and grade levels. Of course, in an inferior social district, where homes are poor and the general cultural conditions are poor, a disproportionately large number of low scores will be obtained, but the wide range and the concentration of scores about the central point still will remain typical features of the distribution. In a superior social district one will obtain a large number of high I.Q.'s, but

²⁵ Bayley, N., "The Role of Intelligence," in Paul Witty (ed.), *Mental Health in the Classroom*, Thirteenth Yearbook of the Department of Supervisors and Directors of Instruction of the N.E.A. (1941), pp. 53-54.

the range will be great and the scores will cluster about a central point. The teacher may expect, therefore, to deal with children varying widely in ability, regardless of the nature of the district or the type of community in which he is teaching. The distributions in Figure 2 show the variability in intelligence reported by Terman and Merrill:

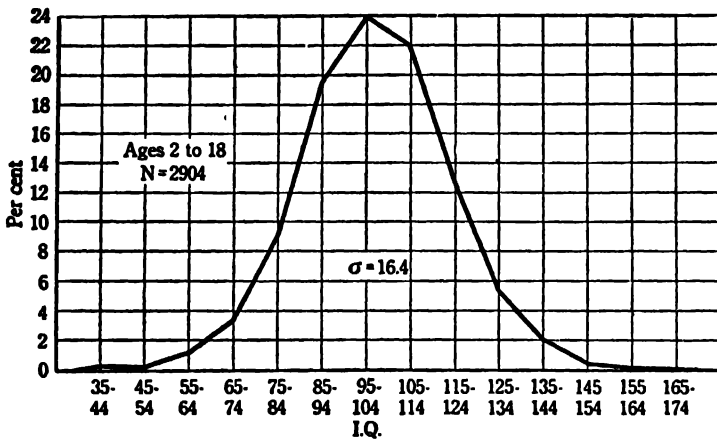


Fig. 2. Distribution of IQ's (after Terman and Merrill).

Somewhat different results may be obtained when different tests are used. Nevertheless, a wide range in scores and a similar distribution of scores are conspicuous features of all the studies, as is shown in Table 1 by the classifications of I.Q.'s reported by Wechsler.

TABLE 1.²⁶ Intelligence classification according to I.Q.—ages 10–60 (actual).

Classification	I.Q. Limits	Per Cent Included
Defective	65 and below	2.2
Borderline	66–79	6.7
Dull Normal	80–90	16.1
Average	91–110	50.0
Bright Normal	111–119	16.1
Superior	120–127	6.7
Very Superior	128 and over	2.2

²⁶ Wechsler, David, *The Measurement of Adult Intelligence*, Third Ed., op. cit., p. 40.

Growth of Intelligence

Research workers and educators have been interested for many years in the following questions: Does intelligence grow at a uniform rate? At what age does intelligence cease to function?

Research workers have employed either one or both of two methods of studying intelligence—the longitudinal or follow-up method and the cross-sectional method.

Since most intelligence tests for children and young people rely heavily upon experience and upon language, they are inadequate as measures of very young children. Therefore, typical behavior patterns of a different type have been set up for judging the intelligence of infants. Items such as the ability to sit alone, to pick up a small object, and to follow a moving object with the eyes, are included in a scale prepared by Arnold Gesell and his associates. Although developmental norms of this kind enable an examiner to estimate a particular child's status, they are not highly reliable in predicting a child's I.Q. when he is older.

The unreliability of intelligence test results obtained at early ages as predictors of later mental growth has been ascribed to a number of factors. Several investigators have pointed to some of the difficulties in testing infants, such as the problem of sustaining attention and rapport of the child. Even with older children, examiner-testee relationship is exceedingly important. One investigator reported in 1950 that three-year-old children did much better on a second testing after they had become well-acquainted with the examiner.²⁷

It has been said, too, that the tests themselves measure different abilities at different ages. Another investigator cited three relatively independent factors which are stressed at various ages: (1) Sensori-motor alertness, most prominent in measuring mental ability up to 20 months; (2) persistence, most prominent from 20 to 40 months; and (3) a broad factor, presumably representing intellectual ability, from 40 months to 18 years.²⁸

It is apparent that growth of intelligence test scores are dependent too upon the attitude of the child at the time a test is administered

²⁷ Escalona, Sibylle, *Use of Infant Tests for Predictive Purposes*, Bulletin of the Menninger Clinic, Vol. 14, pp. 117-28.

²⁸ Hofstaetter, Peter R., "The Changing Composition of 'Intelligence': A Study in Technique," *Journal of Genetic Psychology*, Vol. 85 (September, 1954), pp. 159-64.

as well as upon his emotional adjustment. Harold E. Jones points out that:

. . . A topic as yet very incompletely studied involves the relationship between intelligence and personality and the effect of variations in emotional adjustment and personal integration upon the nature and the efficiency of mental functioning.²⁹

Despite the inadequacies of mental tests, it has been generally believed that intelligence as indicated by I.Q. develops steadily. Several growth curves have been constructed from intelligence test results.³⁰ The curve which Pintner indicated as most representative is parabolic in shape—the increment of intelligence added each year decreases steadily with increase in chronological age.³¹ The curve exhibits its most rapid rise during the first few years in children's lives. Observation confirms this assumption, since the young child must make many and varied adaptations—perhaps more than at any later time. The rate of mental development slows down as the child gets older with constantly decreasing increments of growth appearing until maturity is attained. This fact has been shown in the varied efforts of psychologists, since the advent of the intelligence test, to plot the growth curve.

With the development of child study, more accurate data were obtained on the early growth of intelligence. Arnold Gesell and his associates provided data which enable an investigator to plot a curve for early childhood with considerable accuracy. A. M. Jordon (see footnote 17) has used these data with the results of other studies to construct a graph which reveals the general trend in the growth of intelligence (see Figure 3).

When such group curves are plotted for the large numbers of group subjects, they are smooth and regular. Moreover, curves of mental growth for average, slow learning, and superior children reveal similar trends as shown in Figure 4.

Despite the regularity of growth curves for large numbers of subjects, such curves of *individuals* show great variability. Some children

²⁹ Jones, Harold E., "The Environment and Mental Development," *Manual of Child Psychology*, edited by Leonard Carmichael, Second Ed. (New York: John Wiley and Sons, Inc., 1954), p. 688.

³⁰ Bayley, Nancy, "The Role of Intelligence," in Paul Witty (ed.), *Mental Health in the Classroom*, Thirteenth Yearbook of the Department of Supervisors and Directors of Instruction of the N.E.A. (1941), pp. 53-54.

³¹ Bayley, Nancy, *ibid.*

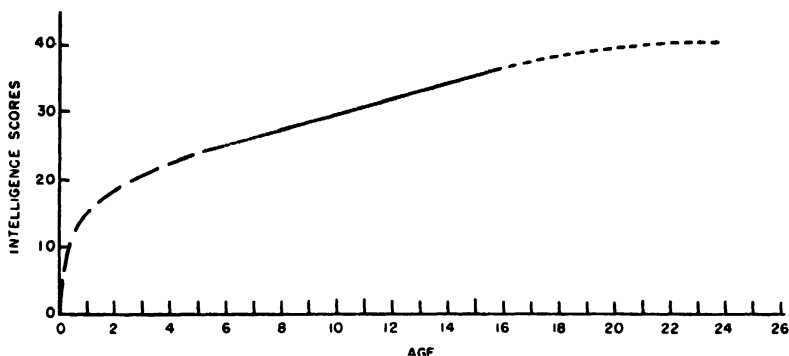


Fig. 3. A composite growth curve that reveals the general trend in the growth of intelligence (after Jordan).

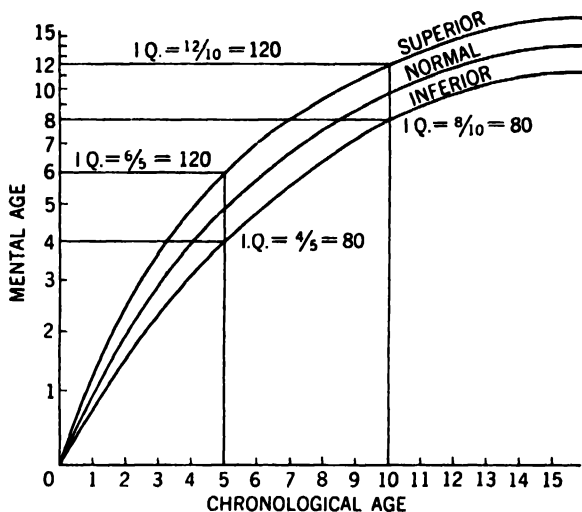


Fig. 4. Hypothetical growth curves that give a constant IQ.

grow rapidly for a time, then develop more slowly. Others show spurts in their development, and still others may actually regress for a time, and then begin a more rapid course of development. These individual variations are traceable to many factors and considerations, such as differences in maturation, emotional stability, and drastic irregularity in the home. Figure 5 presents a graph for ten different children.

We have seen that growth curves for groups are continuous. But

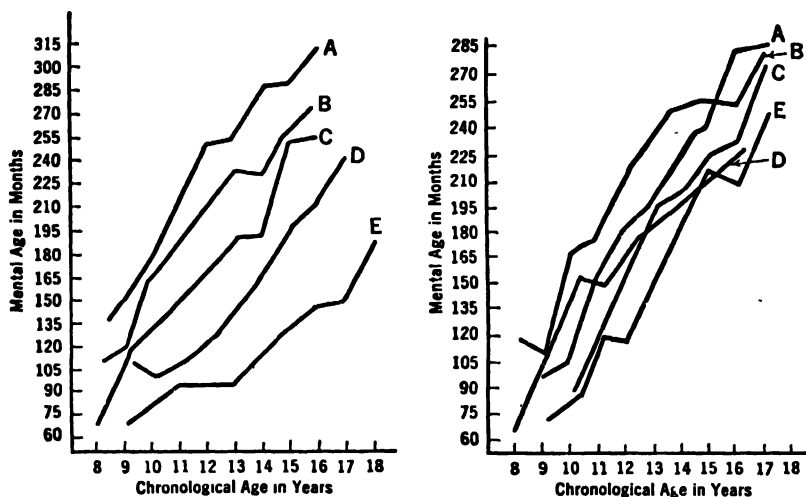


Fig. 5. Growth curves of ten children showing individual variations.

when is mental maturity attained by the typical person? What is the age beyond which average scores cease to increase?

After group intelligence tests were widely used in World War I, it was found that the average scores of men in the age group 21–31 did not increase—the mean score for men of age 21 and for subsequent ages up to and including 31 was about the same. Accordingly, it was concluded that intelligence did not increase during this period. Moreover, a test (Army Alpha) was given to children and young people who showed a steady increase in the average scores of age groups up to about 14 years. At that time, the average attained by the men in the army was reached. It was believed, therefore, that the average intelligence of men in the army was 14 years—the age at which intelligence was thought to stop growing. L. M. Terman in his standardization of the Stanford-Binet test, fixed the upper limit at age 16. Thus, the I.Q.'s of young people of more than 16 years were calculated with age 16 used as the divisor.³² Several other investigators held at that time that the cessation of mental growth transpired at similar early ages (from 14 to 16).

Recent studies have tended to discredit the assumption of the ces-

³² Terman, L. M., *The Measurement of Intelligence* (Boston: Houghton Mifflin Co., 1916).

sation of mental growth at these early ages. There have been several attempts to study the growth of intelligence in adults; these studies suggest continued growth beyond the limits formerly set. But such studies are difficult to make because of the problem of obtaining an adequate and typical sample of young people and adults. When high school and college students are used as subjects and are followed into adult life, the results are not representative of typical persons, since such groups are probably somewhat superior to the average in mental ability. It is of interest, however, that investigators have found continued improvement in average test scores for groups of students who remain in college. An investigator found that the average scores of senior in college were superior to the averages they made as freshmen.

Studies of superior persons show that maximum attainment was usually achieved by most persons, eminent in various fields, at an early age. Thus, H. C. Lehman reported that the peak of creativity in intellectual fields was usually reached before age 40—often earlier in other areas.³³ W. A. Owens concluded that longitudinal studies suggest the continuation of mental growth until the middle twenties with a possible slow decrease up to the early fifties.³⁴

Studies of gifted subjects show not only a persistence and maintenance of high intelligence, but also continuous small increases in scores during the adult years. Nancy Bayley and Melita H. Oden reported in 1955 the results of a follow-up of adults who had been identified as gifted children by L. M. Terman. These investigators administered two forms of a concept mastery test to 422 men and 346 women; the average age of the group was 29½ years when the first form was given and 41½ years at the time the second form was administered. A test-retest correlation of .88 was found for the gifted subjects over the 12 year period. Gains of approximately one-half a standard deviation were also reported.³⁵

L. L. Thurstone reported in 1955 an interesting study of differential mental growth. He found that the earliest of the seven primary

³³ Lehman, H. C., *Age and Achievement* (Princeton, N.J.: Princeton University Press, 1953).

³⁴ Owens, W. A., Jr., *Age and Mental Abilities: A Longitudinal Study*, Genetic Psychology Monograph Vol. 48 (1953).

³⁵ Bayley, Nancy, and Melita H. Oden, "The Maintenance of Intellectual Ability in Gifted Adults," *Journal of Gerontology*, Vol. 10 (January, 1955), pp. 91-107.

mental abilities to mature was the perceptual speed factor; space and reasoning reached their peak at age 14 while the number and memory factors matured at age 16. The factors to mature at the latest ages were verbal comprehension and word fluency. This latter finding is consistent with studies which show gains in vocabulary in studies of adults over a period of years though other abilities may have decreased.³⁶

One of the most widely quoted studies of adult intelligence is that of E. L. Thorndike.³⁷ His investigations show quite clearly that ability to learn that has reached its zenith (at perhaps 22 years) continues to function at least until age 45 is reached. This ability enables adults at these age levels to solve problems, to see relations, to deal with abstractions—indeed, to carry on all kinds of intelligent behavior with success. Therefore, if there is a decline in ability among most older persons, it may be attributable to lassitude, lack of interest, ineffective work habits, and other factors which lessen efficiency in the old and young alike.

It appears that the growth of intelligence is most rapid during the early years of childhood. The variety of experiences and the numerous adaptations of the young child are associated with his intellectual growth. This fact assumes importance in guidance of young children. In his early years, every child needs varied experiences and motivation to develop to his maximum.

When the child enters school, his mental maturity should be estimated and provisions should be made for appropriate endeavor. Since a mental age of six years or more is considered one of the factors associated with readiness for successful silent reading, this fact should be taken into account in guiding each child. Children who are not ready to read should be helped to prepare for successful reading and should be given an opportunity to learn to read just as soon as they are equipped for success in this field.

Studies suggest that a single I.Q.—particularly one obtained on a group test—is not highly reliable for use in predicting growth of intelligence. Therefore each child should be tested repeatedly, since variability may be found in his performance. Test results should be

³⁶ Thurstone, L. L., *The Differential Growth of Mental Abilities* (Chapel Hill: University of North Carolina, Psychometric Laboratory, March, 1955).

³⁷ Thorndike, E. L., et al., *Adult Learning* (New York: The Macmillan Co., 1928).

considered as measures of status attained on particular tests and not as conclusive evidence of unchanging mental ability.

Despite their limitations, intelligence test results can be used to predict growth within broad limits. Particularly helpful are mental test results in diagnosis of the nature and needs of the slow-learning, the gifted, and the retarded child. They are helpful, too, in indicating within limits the level at which successful responses may be expected and hence, can be used to plan the type of experience and to select materials of instruction that will be more appropriate for individuals and for groups.

Prediction of Success in School

In general, it has been found that the I.Q. is useful as one factor in predicting success in school. But it must be recognized that the agreement between intelligence tests and success in specific school subjects, is not always high. To be sure, success in school is a product of many factors and conditions and the I.Q. is only one factor of importance. The relationship between I.Q. and success is highest in areas such as reading comprehension and language facility. It has been pointed out that perhaps this agreement is traceable in part at least to the similarity of the tests of intelligence and of attainment in these areas. Again and again, coefficients of correlations similar to the following have been reported:

I.Q. and reading comprehension	+ .6 - + .7
I.Q. and arithmetic reasoning	+ .5 - + .6
I.Q. and spelling	+ .3 - + .4

Another series of computations discloses similar relationships between I.Q. and success at the secondary school level. E. A. Bond studied tenth grade students to find the relationship of I.Q. to other abilities.³⁸ The following coefficients of correlation were obtained:

I.Q. and reading comprehension	+ .73
I.Q. and reading vocabulary	+ .79
I.Q. and reading speed	+ .43
I.Q. and English usage	+ .59
I.Q. and history	+ .59
I.Q. and biology	+ .54

³⁸ Bond, E. A., *Tenth-Grade Abilities and Achievements* (New York: Teachers College, 1940). (Cited also by Paul H. Mussen and John J. Conger, *Child Development and Personality* (New York: Harper & Bros., 1956), p. 376.

I.Q. and geometry	+ .48
I.Q. and spelling	+ .46

Although these coefficients do not justify narrow prediction of success in school work, they are sufficiently high to have value in association with other measures in attempts to anticipate the quality of attainment in school.

Another value of intelligence testing deserves additional emphasis. The I.Q. used with other measures is especially helpful in identifying children whose ability deviates greatly from the average; for example, the feeble-minded and the gifted. It is also helpful in the identification of the slow-learning and the above average pupil in the regular classroom.

Sex Differences in Intelligence

With the introduction and general use of the intelligence test, it was found that the average scores of boys and girls were strikingly similar.³⁹ Nevertheless, popular thought continues to attribute to the male greater ability in many types of human endeavor commonly regarded as demanding superior intelligence.

Although investigations have revealed only very small differences in the average test scores of boys and girls and of men and women, some studies have been interpreted as demonstrating greater variability of the male—a larger number making extremely low and extremely high scores. B. L. Wellman examined critically some 500 references reporting sex differences and concluded: "In the material covered, there seems to be some slight support for the hypothesis of greater variability of boys. The case is by no means clear, however, the findings depending so much on the measuring instrument, the measure of variability used, the selection of the children, and the sex which obtains the higher mean or median score."⁴⁰

In a provocative account of the gifted child, Terman and Burks assert: "The ratio of gifted boys to gifted girls increases with age, being about seven to six for pupils in the elementary grades, and approximately two to one in the high school. . . . The excess of

³⁹ Goddard, H. H., "Two Thousand Normal Children Measured by the Binet Measuring Scale of Intelligence," *Pedagogical Seminary*, Vol. XVIII, 2 (1911), pp. 232-59; Terman, L. M., *op. cit.*

⁴⁰ Wellman, B. L., "Sex Differences," in C. Murchison (ed.), *Handbook of Child Psychology*, rev. ed. (Worcester, Mass.: Clark University Press, 1933), Chap. XV, p. 630.

boys may be due to greater variability of the male sex and (in later ages) to earlier cessation of mental growth in the girls."⁴¹

Because of some inadequacies in the studies, the writer of this chapter assembled data from group intelligence tests given to 14,149 boys and 13,493 girls distributed through grades nine to twelve in thirteen secondary schools.⁴² This more comprehensive study offered an opportunity to test the hypothesis concerning the greater variability of the male in intelligence.

Almost identical numbers of boys and girls were classified in the I.Q. interval 140 and above, and approximately equal percentages were found in the I.Q. interval 130 to 139. Although larger numbers of boys than of girls are present in the subaverage categories, the differences between the measures of variability for the sexes do not appear to be highly significant. The essential similarity of boys and girls in test-intelligence is clearly demonstrated by the fact that 48.2 per cent of the boys reach or exceed the median score of the girls. These data suggest that differences in the intelligence scores of boys and girls are relatively small and that separate norms for boys and girls are not necessary.

Race Differences in Intelligence

Rates of mental development have been assigned to various "races" in America. The procedure typically followed was to test samples of each "racial" group, calculate average scores, and make comparisons after consulting age equivalents or norms. C. C. Brigham analyzed the scores made by foreign-born recruits in the United States Army during World War I; he found that the recent immigrants made relatively low average scores while the older immigrant stocks made higher averages.⁴³ The conclusion was drawn, for example, that the average intelligence of the Poles, the Italians, the Russians, and the Greeks was low, while that of the English, the Scotch, the Germans, like the native-born Americans, was high. The limiting effects of un-

⁴¹ Terman, L. M., and B. S. Burks, "The Gifted Child," in C. Murchison (ed.), *Handbook of Child Psychology*, rev. ed. (Worcester, Mass.: Clark University Press, 1933), Chap. XIX, p. 776.

⁴² Witty, P. A., "Relative Frequency of Gifted Boys and Girls in the Secondary School," *Educational Administration and Supervision*, Vol. XX, 8 (1934), pp. 606-12.

⁴³ Brigham, C. C., *A Study of American Intelligence* (Princeton, N.J.: Princeton University Press, 1923).

familiarity with language, short period of life in a new world, and lack of acquaintance and experience with custom and tradition were not taken into account; however, Nordic superiority became a generally accepted myth which persisted despite the findings of subsequent studies which cast doubt upon the dogma of racial hierarchy.

In 1930, Brigham qualified his earlier hypothesis concerning race differences because of statistical inconsistencies in the combined scale used for testing in the Army. Otto Klineberg, too, was not satisfied with conclusions drawn from the Army testing.⁴⁴ Proceeding on the theory that immigrant groups tested in America may not have been representative samples of the nations from which they had migrated, he attempted to make a comparison between certain "races" by testing school children in their home countries. He tested subjects in both rural and urban Germany, France, and Italy. The results of his study revealed that differences between races or nations are not so great as are the differences between individuals within a single race or country.

A somewhat similar study was made by Franzblau.⁴⁵ School children in four groups were tested: Danes and Italians in their home countries, and Danish-Americans and Italian-Americans in America. A nonlanguage test was employed for the groups which were equated according to socio-economic status. Test results showed little difference between the European Danes and Italians. The Danish-Americans, however, scored significantly higher than the Italian-Americans. One inference to be drawn is that selective factors rather than differences in nationality account for the higher scores made by the Danish-Americans in this country.

Garth, who for years assigned I.Q.'s to the races, conceded that there is doubt whether the test data present a valid basis for "racial" comparison of Negroes, Mexicans, and Indians.⁴⁶

Negroes in America have been studied much more extensively than the other racial groups; Negroes almost invariably make lower average scores than whites; moreover, Negroes possessing allegedly larger

⁴⁴ Klineberg, O., "A Study of Psychological Differences between 'Racial' and 'National' Groups in Europe," *Archives of Psychology*, 132 (1931).

⁴⁵ Franzblau, R. N., "Race Differences in Mental and Physical Traits Studied in different environments," *Archives of Psychology*, 177 (1935), quoted by L. E. Tyler, *The Psychology of Human Differences* (New York: Appleton-Century-Crofts, Inc., 1947), p. 126.

⁴⁶ Garth, T. R., "Racial Minds," *Psyche*, Vol. VIII, 3 (1928).

amounts of white blood usually make higher average scores than those of alleged pure Negroid ancestry.

Herskovits' study of Howard University men, reported in 1926, was one of the first rather thorough approaches to the problem of the relationship of Negro-white mixture and mental test ability.⁴⁷ Herskovits concluded:

The relationship between test scores and physical traits denoting greater or less amounts of Negro blood is so tenuous as to be of no value in drawing conclusions as to the comparative native ability or relative intelligence of the Negro when compared to the white.⁴⁸

Numerous studies of American Indian children have yielded lower test scores for this group than for white children. However, Indian children have been found to score much higher on nonverbal than on verbal tests. For example, Klineberg described an investigation of the comparative ability of Indian and white girls in reproducing a simple bead design on a loom. The Indian children did better on this test than did the white group. In other nonverbal tests such as drawing a man, Indian children did better than white children. It appears that scores on certain items included in intelligence tests are similarly influenced by the culture in which the subject has lived.⁴⁹

It must be clear that if a test were flawlessly constructed, it would be useful in making race comparisons when, and only when, the groups tested have had common interests and experiences.

In an effort to devise a "culture-fair" or "culture-free" test which will present problems "common to the culture and practice of all socio-economic groups in the population to be tested," Allison Davis and Kenneth Eells have developed an individual test of intelligence on two levels, one for the primary grades and one for elementary school pupils.⁵⁰ Until the validity of this test or similar tests has

⁴⁷ Herskovits, M. J., "On the Relation Between Negro-White Mixture and Standing in Intelligence Tests," *Pedagogical Seminary*, Vol. XXXIII, I (1926), pp. 30-42; and M. J. Herskovits, *Anthropometry of the American Negro* (New York: Columbia University Press, 1930).

⁴⁸ Herskovits, M. J., "On the Relationship between Negro-white Mixture and Standing in Intelligence Tests," *Pedagogical Seminary*, Vol. XXXIII, I (1926), p. 41.

⁴⁹ Corroboration of Herskovits' conclusions may be found in J. Peterson and L. Lanier, "Studies in the Comparative Abilities of Whites and Negroes," *Mental Measurements Monographs*, Vol. II, 5 (Baltimore: The Williams and Wilkins Co., 1929).

⁵⁰ *Test of General Intelligence or Problem Solving Ability* (New York: World Book Co., 1953).

been established and the tests widely employed in measuring and comparing different "races," one should exercise caution in accepting generalizations concerning the intelligence of the races. The most significant fact to bear in mind is the similarity of different races as well as the fact that within every racial group extreme deviates will be found. It is important that we ascertain and develop fully the widely distributed abilities which will be found in every racial group.⁵¹

Perhaps the most crucial data on this problem were obtained during World War II in Special Training Units of the Army. The men in these units were functionally illiterate recruits, who were taught the basic literacy skills in reading, writing, and arithmetic.

Thousands of men in different nationality groups were given an intensive eight-week course. It was clearly established that all racial groups learned with approximately equal efficiency.⁵² Accordingly, if intelligence is judged by learning ability, one would be obliged to conclude that differences between these racial groups in ability to learn were not conspicuous.

In conclusion, the words of Franz Boaz are fitting: "If we were to select the most intelligent, imaginative, energetic and emotionally stable third of mankind, all races would be represented."⁵³

Some Educational Values of Intelligence Tests

We have indicated that intelligence tests are valuable aids in helping us identify slow-learning, average, and rapid-learning children. They reveal, moreover, the level at which successful school work may be expected; hence, they may be used as one basis for the selection of instructional materials and experiences. Moreover, they may be used within broad limits to predict the development of these groups of children.

In the following brief discussion of three types of pupils, we shall describe how each type may be selected and shall set forth the kinds of instructive materials and experience that seem desirable.

⁵¹ Davis, Allison, and Robert D. Hess, "What About IQ's?" *NEA Journal* (November, 1949), pp. 604-05. See also Allison Davis, *Social Class Influences upon Learning* (Cambridge: Harvard University Press, 1948); and Kenneth Eells, A. Davis, R. J. Havighurst, V. E. Herrick, and R. W. Tyler, *Intelligence and Cultural Differences* (Chicago: University of Chicago Press, 1951).

⁵² Witty, Paul, *Reading in Modern Education* (Boston: D. C. Heath and Co., 1949).

⁵³ Boaz, Franz, *Anthropology and Modern Life*, rev. ed. (New York: W. W. Norton and Co., Inc., 1932), p. 79.

It will be noted that the intelligence test score is only one factor considered in the selection of each group.

The Educable Mentally Handicapped

Representatives of the American Association for the Study of the Feeble-minded concluded in 1911 that:

The term "feeble-minded" refers to all degrees of mental defect caused by arrested or imperfect mental development—the person so affected is incapable of managing himself or his affairs with ordinary prudence. The feeble-minded include:

- a. Idiots, deeply affected, who never exceed the mental level of the normal child of two years;
- b. Imbeciles, higher than the idiot, who do not exceed the mental level of the normal child of seven years;
- c. Morons, the highest grade of feeble-minded, who do not exceed the level of the normal child of twelve.

The intelligence test was used for years as the generally accepted basis for identifying the feeble-minded. But the attitude of psychologists has been altered during the past two decades, for it has been found that I.Q.'s are more changeable than we had previously assumed, and that impoverished conditions and situations may operate to depress the I.Q. appreciably. These forces work with greatest strength during the preschool period. Their significant role at this time is being increasingly recognized.

Despite its limitations, the I.Q. is one essential item in the diagnosis of feeble-mindedness and backwardness. Offering by no means a complete diagnosis of the condition, the I.Q. provides, nevertheless, one important indicator of the feeble-minded child's mental status. It is well to point out that at the time the mentally-handicapped child becomes a candidate for observation and special class assignments in the typical school, his plight is often acute, for at that time, he is frequently 9 or 10 years of age. Environmental forces have already had abundant time to produce marked effects in him. At these ages, attempts have been made to increase the mental efficiency of these groups through physical therapy: tonsils have been removed, surgical operations performed, teeth drawn, and nutrition improved; yet their mental test ratings have been altered little.⁵⁴

Today the tendency is to refer to as feeble-minded those children

⁵⁴ Pintner, R., "Feeble-minded Child," in C. Murchison (ed.), *Handbook of Child Psychology*, rev. ed. (Worcester, Mass.: Clark University Press, 1933),

formerly designated as the imbeciles and the idiots—with I.Q.'s roughly 50 to 55 and lower. The diagnosis of feeble-mindedness is, of course, much more comprehensive and the use of I.Q. is only one approach employed.

The group formerly referred to as "moron" is to a large extent now included among the "educable mentally handicapped." An "educable mentally handicapped child" may be defined as one whose rate of mental development is so slow that he requires special services in order to develop to his maximum. For such children, classes are organized in public schools and state funds are often made available to assist in their education. In Illinois and many other states, significant progress is now being made. Requirements have been drawn up for classes, including the training necessary for the teacher and the psychologist, the size of class and facilities, and the nature and type of curriculum. Interest in the education of the mentally handicapped has increased, and today there is a tendency to include even the lower grade—the "trainable mentally-handicapped" in the special services provided.

Educators agree that in classes for the "educable mentally handicapped" emphasis should be placed upon social adjustment rather than upon academic attainment. "The objective of the whole program is to make the individual, however low his intelligence may be, happier and more comfortable as well as useful by helping him to contribute something to the life of which he is a part."⁵⁵

For the children of a mental age of above six years, some instruction in the fundamentals of reading, writing, and arithmetic is offered. For adolescents above a mental age of six years, the following activities are considered important:

1. Participation in social and civic activities, either in the community or in the institution.
2. Manual activities in the shop, the kitchen, the laundry, and in various types of occupations.
3. Health and physical pursuits, including sports and games.

Chap. XX, P. 834. See also, E. A. Doll, "The Feeble-minded Child," *Manual of Child Psychology* (New York: John Wiley and Sons, Inc., 1946).

⁵⁵ Martens, Elise H., (revisor), "Curriculum Adjustments for the Mentally Retarded: A Guide for Elementary and Secondary Schools," *Bulletin*, 1950, Federal Security Agency, Office of Education (Washington, D.C.: U.S. Government Printing Office, 1950), No. 2, p. 16. (See also, Ray Graham, "The Educable Mentally Handicapped," Circular Series B, No. 12, rev., issued by Vernon L. Nickell, Supt. of Public Instruction, Springfield, Illinois, 1950.)

4. Homemaking experiences in housekeeping responsibilities, household budgeting, child care, home beautification, and the general repair work often needed in the home.⁵⁶

All instruction should be kept on a functional basis. When the handicapped child "reaches the adolescent period, regardless of his previous educational achievement, emphasis should be placed upon civic, social, manual and occupational activities having a direct bearing upon the life situation to follow."⁵⁷

The activities described in the monograph, *Curriculum Adjustments for the Mentally Retarded*, may bring about a natural coalition of immediate life problems with school endeavor. Appropriate activities are also set forth in a comprehensive treatment by S. A. Kirk and G. O. Johnson. Few teachers will desire to follow these descriptions exactly, but most can profit by developing projects along similar lines. Indeed, every teacher might find here suggestions for making school more vital, interesting, and worthwhile. Many of the suggestions apply to the dull and slow-learning child as well as to the handicapped. Almost all teachers must deal with retarded children. To do so more intelligently and more sympathetically they must understand the problems confronting the mentally handicapped, and they must have recourse to activities and materials which will enrich the experience and nourish the abilities of this group.⁵⁸

The Slow-Learning Child

Another group of children below average in intelligence deserves the attention of the student of educational psychology. The slow-learning child is found in almost every classroom and presents a problem and challenge to every teacher. The slow-learning child is one in the interval roughly of I.Q. 75-90. In the regular class, the teacher

⁵⁶ Martens, Elise H., *op. cit.*, p. 17.

⁵⁷ Martens, Elise H., *op. cit.*, p. 18.

⁵⁸ A most helpful volume, containing numerous additional suggestions, is Christine Porter Ingram, *Education of the Slow-Learning Child*, Second Ed. (New York: The Ronald Press Company, 1953). Another helpful volume is S. A. Kirk, *Teaching Reading to Slow-Learning Children* (Boston: Houghton Mifflin Co., 1940). See also S. A. Kirk and G. O. Johnson, *Educating the Retarded Child* (Cambridge: Houghton Mifflin Co., 1951). See also 49th Yearbook. N.S.S.F., *The Education of Exceptional Children*, Part II.

may observe the following additional characteristics of this type of such children: ⁵⁹

1. Is unable to think abstractly or to handle symbolic material.
2. Is unable to understand and carry through your directions for assignments.
3. Lacks the so-called "common sense" and reasoning level of the group.
4. Is unable to understand complex game rules.
5. Is slow in all areas; academic, social, emotional, and physical.
6. Breaks rules of conduct or of games and is often unaware of it.
7. Is unable to work independently.
8. Is easily confused.
9. Has a short interest and attention span.
10. Is unable voluntarily to concentrate.
11. Finds it extremely difficult, if not impossible, to keep up with the class on academic work.
12. Is behind normal grade achievement in school.⁶⁰

After the slow-learning child is identified, the teacher faces the problem of providing for him in every type of school endeavor. Since it is important that such a child experience success in his academic work, the teacher will attempt to ascertain his academic status and offer suitable opportunities for him to progress steadily in acquiring academic skills. In addition, he should have suitable experience adapted to his relatively slow rate of learning. Frequent grouping of such pupils for some types of academic work within the classroom is desirable. For example, if a teacher finds one-third or one-fourth of her fifth grade children are slow-learning, she may group them for instruction in reading. She will obtain the results of standardized reading tests to determine the point at which successful instruction may be started. If the group has an average reading attainment at the third grade level, she will obtain easy instructional materials for them. She will also make abundant use of direct experience and concrete examples. Books, magazines, and children's newspapers will be selected from materials on appropriate levels and introduced to broaden reading experience. For example, *My Weekly Reader* (third grade edition) will be employed for individual and group work. In selecting appropriate stories, use will be made also of sources such as the

⁵⁹ Kough, Jack and Robert F. DeHaan, *Identifying Children Who Need Help*, Teachers Guidance Handbook, Part I, Better Living Booklets (Chicago: Science Research Associates, 1955).

⁶⁰ Kough, Jack, and Robert F. DeHaan, *ibid.*

American Library Association's *Subject Indexes*, prepared by Eloise Rue. Catalogs (including lists of books such as that published by the Cadmus Company) and other lists will be employed to select suitable stories and books to be read. Skill building materials (such as the *Phonic Skilltexts* of the Charles Merrill Company) will be introduced as the needs of the children are ascertained. Comparable provisions will be made in arithmetic and spelling instruction, with the teacher always bearing in mind the importance of functional values and immediate use of academic experience. Every effort will be made to help each child develop to his maximum according to his unique nature and needs.

The Gifted Child

With the development of the intelligence test and its widespread use, gifted children were defined and selected. L. M. Terman referred to those children whose intelligence quotients were 130 or higher as "gifted" (about 1 per cent of the school population). More recent estimates of the frequency of high I.Q.'s vary somewhat from the earlier findings. Thus it is reported that one child of 10,000 has an I.Q. which equals or exceeds 160; three children out of 10,000 have an I.Q. which equals or exceeds 156; eight children of 10,000 have an I.Q. which equals or exceeds 152; two children of 1,000 have an I.Q. which equals or exceeds 148; four children of 1,000 have an I.Q. which equals or exceeds 144; seven children of 1,000 have an I.Q. which equals or exceeds 140; one child of 100 has an I.Q. which equals or exceeds 136; three children of 100 have an I.Q. which equals or exceeds 130.⁶¹

Some school people include in the gifted group pupils whose I.Q.'s are 120 and higher. These young people are often referred to, not as gifted pupils, but as rapid learners. Such children, identified by intelligence tests, possess outstanding abstract or verbal intelligence. But the intelligence test does not enable us to identify all gifted children. Expression is blocked in some children by strong emotion or by insecurity traceable to deprivations at home. In communities which offer children only meager opportunities, the expression of intelligence may be different from that found in more fortunate or privileged areas.

⁶¹ Cited in Mussen, P. H., and J. J. Conger, *Child Development and Personality* (New York: Harpers & Bros., 1956), p. 374.

Moreover, there are children whose ability in art, music, or writing, though rare and distinctive, can be recognized only by *performance*. Perhaps it is desirable to broaden our definition and to consider any child as potentially "gifted" whose performance in a valuable line of human activity is consistently remarkable.

There is an increased tendency to think of the gifted in terms of this broader definition. In an experiment now under way in Portland, Oregon, teachers' judgments and the results of standardized mental and educational tests are used for screening and examining children of high ability, with a view to enrichment of their school programs. "Children are also screened for exceptional talent in the areas of art, music, mechanical comprehension, creative writing, creative dance, creative drama, and social leadership."⁶²

When children are selected for special classes, such as the Major Work Classes in Cleveland, or for special schools, as in the case of Hunter College Elementary School, New York City, the I.Q. is a determining factor.⁶³ For example, enrollment in the Major Work Classes requires an I.Q. of 125 to 130 or above. In the Hunter College Elementary School, the I.Q. average is approximately 150.⁶⁴ Other factors, too, usually enter into the selection of gifted children. In a specialized high school such as the *High School of Science* in the Bronx, a number of criteria, including intelligence results, are employed. Morris Meister, principal of this school, suggests that a rough line of demarcation be drawn at a 120 I.Q. in selecting moderately and highly gifted high school students. Such a practice would include approximately 10 per cent of the students in many high schools.⁶⁵

It should be pointed out that classes and schools for gifted children are few throughout our country and that most of them are in large cities. Since at least half the gifted children of our nation live in relatively small cities, towns, and rural districts, the task of identifying many gifted children lies in the hands of regular classroom teachers. To accomplish this task, teachers should use the results of tests sup-

⁶² Williams, Clifford W., in *A Survey of the Education of Gifted Children*, Supplementary Educational Monograph No. 83, by Robert Havighurst, Eugene Stivers, and Robert F. DeHaan (Chicago: University of Chicago Press, November, 1955), p. 88. See also page 6.

⁶³ Witty, Paul, (ed.) *The Gifted Child* (Boston: D. C. Heath, 1951).

⁶⁴ Hildreth, G., F. Brumbaugh, and F. Wilson, *Educating Gifted Children* (New York: Harper & Bros., 1952).

⁶⁵ Meister, Morris, in Witty (ed.) *op. cit.*

plemented by continuous and discriminating observation of their pupils.

Genetic studies have revealed clearly the falsity of many opinions about gifted children. Contrary to popular thought, the pupil of high I.Q. has been shown to be above the average, physically and socially—not the physical weakling and social misfit so often pictured. Moreover, the gifted pupil tends to excel in *all* his schoolwork. His general educational growth progresses at such a rapid rate that in the upper elementary school he has acquired knowledges and skills which surpass those of children two or three grades above him. By the time he is 10, he usually has educational attainments far in excess of the average for his grade.⁶⁶

Accordingly, the gifted child needs stimulating and challenging experiences which he rarely receives in the large classes of most elementary schools today. In fact, in many cases his unusual ability is not even recognized. Many school people acknowledge this gross neglect. Although relatively little is done to alter the situation, the increased interest in the problem today is heartening.

Following the identification of gifted pupils and a study of their interests and needs, classroom teachers are taking a variety of steps. They are providing challenging educational experiences and goals for these children. Too often the work in the regular class is far too easy for them. As a result, they may become disinterested and unresponsive in school. The classroom teacher should ascertain the educational attainment of each gifted child, preferably by use of standard tests, and offer him an opportunity for educational endeavor at his level. *It is unsatisfactory and undesirable simply to provide for the gifted child a larger amount of work of the kind engaged in by other class members.*

There are several other steps the teacher may take in efforts to guide and extend the reading of gifted pupils. The field of reading offers an unusual opportunity for enrichment of gifted children's experiences. Since this type of pupil usually has little or no difficulty in learning to read, special instruction in the development of reading skills will rarely be needed. But such pupils need guidance, since they often neglect several important areas in their reading. To become in-

⁶⁶ Because of these facts, acceleration is being increasingly recommended. Cf. Worcester, D. A., *The Education of Children of Above Average Mentality* (Lincoln: University of Nebraska Press, 1956).

dependent and resourceful in finding and using books, they need both direction and encouragement. The teacher of gifted children must, therefore, become acquainted with children's literature, including biographical and factual materials. Interest inventories may be used to identify and evaluate the interests. The teacher should then help gifted children find appropriate reading materials to satisfy, extend, and enrich these interests.

The teacher should attempt to associate reading experience with the "developmental needs" of gifted pupils. Studies have repeatedly shown that successful and meaningful experience in reading may contribute to mental health. It is recognized, of course, that experience in reading will not alone result in wholesome development of children and youth. However, if reading is used in association with other activities, it may foster desirable growth.

A number of gifted pupils who were studied in the Psycho-Educational Clinic and who presented minor or serious behavior problems have been described.⁶⁷ Study of their interests and needs yielded clues as to areas in which reading might prove of greatest value. Following these reading experiences, examinations revealed marked gains in adjustment and behavior. Books helped some of the pupils to understand themselves better and to approach in a more intelligent way their personal and social problems.

Through a broad acquaintance with books, the teacher will be able to find those suitable to satisfy each child's needs. For an insecure young child, she may find that the book *So'm I* by Ted Key will give him a feeling that he, although lacking in some respects, is superior in others. Similarly, such a book as Elizabeth Yates' *Amos Fortune: Free Man* may help a middle-grade child to adjust to problems faced by a minority group, as well as aid him in the development of an appropriate ideal of self.

It is important, too, for the teacher to try to see that the reading program of each gifted child is balanced through the use of a wealth of good materials—realistic fiction, animal stories, biography, factual information, modern fantasy, folk tales and tall tales, and poetry. Newspaper and magazine reading are also phases of a well-balanced,

⁶⁷ Witty, Paul, "Reading Success and Emotional Adjustment," *Elementary English*, Vol. XXVII (May, 1950); "Reading to Meet Emotional Needs," *Elementary English*, Vol. XXIX (February, 1952).

developmental reading program. The teacher should make sure that the reading experiences of the gifted are broad and varied. The use of carefully chosen book clubs and book lists will help in this effort.

The classroom teacher should foster varied forms of creative activity and enrichment for the gifted pupil. Excellent potentialities reside in the field of writing and the language arts. A film such as Arne Suckdorf's *The Hunter in the Forest*, issued by Encyclopaedia Britannica Films, may be used to provide a rich background and strong motivation for creative writing. This film may be employed as one means for identifying gifted pupils in the field of writing.

Every subject area offers similar opportunities for enrichment of the gifted child's experience. Yet studies show that provisions for the gifted pupil are meager in the typical classroom. Good teachers everywhere have always made an important contribution to the growth of capable students. However, in large classes the pressure of excessive numbers of pupils is likely to cause teachers to neglect the gifted. Every teacher can do something to alter this situation.

Aptitude Testing

Recognition of the incompleteness of intelligence test ratings in predicting many types of development led to a search for more reliable instruments to gauge aptitude and talent. In a sense, the intelligence test may be thought of as an aptitude test—a measure useful in forecasting, within certain broad limits, a child's success in school work. Here, again, we should point out that such an approach should never be narrowly conceived. In association with data obtained from a comprehensive study of each child, the intelligence test is useful. Similarly, in a comprehensive study and appraisal of a child, another aptitude test may yield valuable information.

The widespread interest in this field is indicated by the fact that during the three-year interval 1932–1935 the scientific writings contained over 200 titles on aptitude tests.⁶⁸ Since 1935, interest in the measurement of aptitude has continued.

The term "aptitude" is used in two ways: ". . . one as a measure of a special ability (for example, the measurement of visual acuity), and the other as a prognostic measure (for example, the use of a

⁶⁸ Toops, H., and G. F. Kuder, "Measures of Aptitude," *Review of Educational Research*, Vol. V, No. 3 (June, 1935), pp. 215–28.

special test to forecast success in an occupation).”⁶⁹ Some psychologists stress the second interpretation and distinguish between aptitude and proficiency. According to Hull “. . . an aptitude test is a test designed to discover what potentiality a given person has for learning some particular vocation or acquiring some particular skill.”⁷⁰ Thus, a clerical aptitude test may be employed to test a girl who has had no training in this field but who wishes to know whether she possesses the capacity to become a successful clerical worker. A proficiency test, on the other hand, attempts to reveal how skillful a person actually is in a particular type of activity or job, regardless of the amount of training he has had or the degree of ability he possesses.

The difference between natural aptitude and acquired ability is much more a matter of theoretical interest than of practical concern, for it is very difficult to estimate the relative influence of the two factors. In general, it may be said that tests labeled “aptitude” tests seek to predict accomplishment in relatively narrow fields such as manual dexterity, mathematical ability, stenographic ability, and so forth.⁷¹

Among the first aptitude tests were those of C. E. Seashore, who investigated the basic abilities required in singing or in playing musical instruments. The *Seashore Measures of Musical Talents* were devised to ascertain the extent or degree to which a group or an individual possessed these basic abilities. The most important tests may be given by use of six recordings to obtain ratings of pitch, loudness, time, timbre, rhythm, and tonal memory.

Seashore and his students experimented extensively with these tests, and reported results which suggest certain limitations. The tests appear to be most adequate in identifying extreme cases—students with either little or exceptional promise. Grades of abilities within different groups—especially in the capable group—are less successfully predicted. The tests constitute, however, an important practical achievement in the field of music.

Many studies have been conducted in the search for the special

⁶⁹ Segel, D. “Measurement of Aptitudes in Specific Fields,” *Review of Educational Research*, Vol. XI, No. 1 (February, 1941), pp. 42-56.

⁷⁰ Hull, C. L., *Aptitude Testing* (New York: World Book Co., 1928), p. 50.

⁷¹ Ruch, G. M., and D. Segel, *Minimum Essentials of the Individual Inventory in Guidance*, Office of Education, Vocational Division Bulletin No. 202. (Washington, D.C.: U.S. Government Printing Office, 1940).

abilities underlying mechanical aptitude. A number of tests have been devised, such as the *Stenquist Mechanical Aptitude Tests*, the *MacQuarrie Test for Mechanical Ability*, the *S.R.A. Mechanical Aptitudes tests* and the *Revised Minnesota Paper Form Board Test*. Various studies of the practicality of these tests have yielded somewhat conflicting results; yet, many competent students agree that knowledge of the basic abilities measured by them constitutes a practical aid in effective counsel and guidance.

It has been held by some investigators that individuals differ in their social intelligence—in their aptitude for getting along with people. Hence, tests have been made for studying children's social adjustment and adaptability. One of the most widely used individual tests is the *Vineland Social Maturity Scale*.

The scale provides a definite outline of detailed performance in respect to which children show a progressive capacity for looking after themselves and for participating in those activities which lead toward ultimate independence as adults. The items of the Scale are now arranged in order of increasing difficulty, and represent progressive maturation in self-help, self-direction, locomotion, occupation, communication and social relations. . . . The underlying principles involved in the construction of this scale are much the same as those employed by Binet and Simon for their scale for measuring intelligence. Each item is conceived as representing a general growth in social responsibility which is expressed in . . . performance.⁷²

Measures of talent have been developed in an effort to select and guide students more effectively in the field of arts; for example, the *Meier-Seashore Art Tests*. These tests explore the student's ability to recognize merit in acknowledged products of art. The student is asked to examine the samples and to select the best product. Such tests simply mark a beginning in the analysis and study of artistic appreciation. Nevertheless, they represent, with tests of literary appreciation, a beginning in an important area.

Concerning the progress made in the measurement of artistic ability, Anne Anastasi writes:

Progress toward the measurement of artistic aptitudes has been relatively slow. In number, scope, and technical refinements, tests in this area have lagged far behind other aptitude tests. In part, this condition may result from the resistance which artistically trained persons have exhibited

⁷² Doll, Edgar A., *Vineland Social Maturity Scale* (Minneapolis: Educational Test Bureau, 1947), pp. 1-2.

toward objective measurement, quantification, and the "scientific" approach to artistic talent. Traditionally, art and science have been regarded as fundamentally dissimilar and mutually incompatible in their points of view. Even today, many artists and art teachers look upon psychological testing with suspicion or skepticism.⁷³

For years there has been an effort to develop tests that will predict success in athletics and sports. Early tests such as the *Brace Motor Ability Tests* and the *Rogers Physical Capacity Tests* are examples. In the Rogers tests, a strength index is obtained from measures of grip, and so forth; an athletic index from success on the 100-yard dash, the broad jump, and other facts; and a skill index from ability to throw a baseball, football, or basketball. Such tests, like other predictive measures, are of value chiefly in supplementing and extending other types of data that may be assembled in an effort to understand and guide pupils.

Many tests of aptitude are individual examinations which can not readily be used by many classroom teachers. But teachers can employ interest inventories, anecdotal records, and other procedures to obtain information concerning pupils—their aptitudes and their needs. Such studies may lead the teacher to recognize the child who is decidedly withdrawn or isolated from his group. They will help, too, in the identification of other pupils who are in need of greater social experiences or guidance in special fields. For example, in the *Northwestern University Interest Inventory*,⁷⁴ there are questions related to the child's wishes and his fears, as well as to his preferences in play and in many other activities. From this inquiry, the teacher often gains important insights concerning the child's nature and needs.

Prognosis tests in special subject fields have also been developed. Readiness for reading is one of the abilities most thoroughly investigated in the elementary school. For secondary school students, instruments such as the *Orleans Algebra Prognosis Test* have been constructed to predict success in particular subjects. The relationship of scores on these tests to success in particular fields is sufficiently

⁷³ Anastasi, Anne, *Psychological Testing* (New York: The Macmillan Co., 1954), p. 424. Used with the permission of the Macmillan Company. For evaluation of tests, see O. K. Buros, (ed.), *Fourth Mental Measurement Yearbook* (Highland Park, N.J.: The Gryphon Press, 1953).

⁷⁴ *Northwestern University Interest Inventory* by Paul Witty, Ann Coomer, and David Kopel, published by the authors and available at the Northwestern University Psycho-Educational Clinic.

high to make them of value when they are employed in conjunction with other measures. Considerable work on prognosis tests is now under way with college students. It seems that few of these tests have a greater predictive value than a combination of grades and mental test results.⁷⁵

Before attempting to use an aptitude test, the teacher should seek to determine what has been reported concerning the validity of the test, the kind of group upon which it has been standardized, the number of cases employed, and so forth. At the present time, most of these tests are crude measures; hence, the teacher must be cautious in interpreting the results.

One of the most significant practical applications of psychological testing is found in the area of vocations and guidance. In addition to the use of the above cited tests, appraisal of students' vocational aptitude and ability may be found by employing inventories such as Strong's *Vocational Interest Blank*,⁷⁶ and the *Kuder Preference Record-Vocational*.⁷⁷ A most significant contribution in this field has been made by E. K. Strong. For example, one of his blanks for men (ages 17 and over), explores maturity of interest, masculinity, femininity, studiousness, 39 occupations, and six occupational groups. Illustrative of other tests is the *Occupational Interest Inventory*⁷⁸ devised by E. A. Lee and L. A. Thorp.

We have already indicated that the classroom teacher is usually unprepared or unable to use individual tests and some group tests. But the problem of studying the abilities and aptitudes of pupils is a constantly recurring responsibility in the classroom. Recognition of this fact led investigators to develop a *Teacher's Guidance Handbook*,⁷⁹ which contains suggestions for studying pupils that may be used by the regular classroom teacher.

This volume is in two parts. Part I contains units to help teachers identify several types of exceptional pupils, including: intellectually gifted children, children with scientific ability, slow learners, children

⁷⁵ Stephens, J. M., *Educational Psychology* (New York: Henry Holt & Company, 1956), p. 174.

⁷⁶ Published by Stanford University Press, Stanford, California. See especially Darley, J. G., *Clinical Aspects and Interpretation of the Strong Vocational Interest Blank* (New York: Psychological Corporation, 1941).

⁷⁷ Published by Science Research Associates, Chicago, Illinois.

⁷⁸ Published by California Test Bureau, Los Angeles, California.

⁷⁹ Kough, Jack, and Robert F. DeHaan, *Teachers Guidance Handbook*, op. cit.

talented in fine arts, children with leadership abilities, children with mechanical skills, children with physical skills.

Part II of the handbook includes many practical suggestions for teachers to follow in offering stimulation and guidance to pupils in each of these categories. This volume is an extremely valuable source for the regular classroom teacher to employ in efforts to identify children who need help and to provide appropriate and individual satisfying experiences for them.

Summary and Conclusions

The intelligence testing movement made a conspicuous appearance in 1916. By 1920, it had penetrated far and deeply into American educational practices; and from 1920 to 1930, its influence was apparent in almost every school system. In many other ways, its influence was clearly shown; for example, in most professional publications which made their appearance during this period it occupied a high rank among topics considered of significance in effective teaching. In these volumes, students of education were advised of three main uses for mental tests: (1) diagnosis, (2) prognosis, and (3) classification of school children. The intelligence test was often treated as an accurate means of ascertaining a pupil's rate of growth and development. Expectancies in educational accomplishment were set forth both for general academic proficiency and for specific subject mastery as well. Moreover, since it was believed that the intelligence tests yielded a fairly reliable measure of inborn ability, test results were employed for classifying pupils into "homogeneous" groups and for guidance into occupations for which their ability would qualify them. These and many other practices illustrate the far-reaching results of the intelligence testing movement in education.

During the past 35 years, intelligence tests have been subjected to careful study, and a large amount of experimental data have been accumulated which enable us to appraise tests with greater fairness and impartiality. We are now aware of the limitations as well as the values of intelligence tests. It is clear that many of the high hopes and optimistic claims of mental test enthusiasts have not been fulfilled. For example, we are fully aware that a single test does not give a highly reliable measure of the individual's ability. In this chapter, we have noted again and again the hazards of predicting mental growth too narrowly from test results. And the difficulties involved in various practices such as homogeneous grouping are now recognized.

CHART I. Representative tests of intelligence with salient data *

Name of Test	Age or Grade Level	Group (G) or Individual (I)	Time Required for Administering	Publisher	Date of Publication
American Council on Education Psychological Examination for High School Students	Grades 9-12	G	35-65"	E T S†	1952
	College Freshmen	G	40-65"	E T S	1950
	Grades Kdg.-1 1-3 4-8 7-10 9-16	G	40-60"	C T B	1951
California Short Form Test of Mental Maturity	Grades 1-2 3-6	G	60-90" 100-120"	W B C	1952
	Grades 3-6 6-9 9-12	G	30"	H M C	1957
	Grades Kdg. 1, 2, 3, 4, 5, 6, 7-8, 9-12	G	30-45"	P P	1952
Davis-Eells Test of General Intelligence or Problem-Solving Ability (Davis-Eells Games)	Grades 1-2 3-6	G	60-90" 100-120"	W B C	1952
	Grades 3-6 6-9 9-12	G	30"	H M C	1957
Hennon-Nelson Tests of Mental Ability (Rev. Ed.)	Grades 3-6 6-9 9-12	G	30"	H M C	1957
	Grades Kdg. 1, 2, 3, 4, 5, 6, 7-8, 9-12	G	30-45"	P P	1952

CHART I (Continued)

Large-Thomdike Intelligence Tests (Verbal Batteries)	Grades 4-6 7-9 10-12	G	34"	H M C	1954
Ohio State University Psychological Test	Grades 9-16	G	120"	S R A	1950
Otis Quick-Scoring Mental Ability Tests (New Ed.)	Grades 1-4 4-9 9-16	G	25" 30" 30"	W B C	1954
Revised Stanford-Binet Scale	Ages 2-adult	I	60-90"	H M C	1937
SRA Primary Mental Abilities	Ages 5-7 7-11 11-17	G	60-80" 60" 45"	S R A	1949
Terman-McNemar Test of Mental Ability	Grades 7-12 College Freshmen	G	40-50"	W B C	1949
Wechsler Adult Intelligence Scale (includes both a verbal and a nonverbal scale)	Ages 16-75 and over	I	40-60"	P C	1955
Wechsler Intelligence Scale for Children (includes both a verbal and a nonverbal scale)	Ages 5-15	I	40-60"	P C	1949

Nonverbal Tests of Intelligence

Arthur Point Scale of Performance Tests	I	45-90'	C H S	1947
Ages 4-5 or 5-5 to superior adults				
Chicago Nonverbal Examination	G	40"	P C	1947
Large-Thorndike Intelligence Tests (Nonverbal Batteries)	G	3 periods of 7-8"	H M C	1954
Porteus Maze Test (Vineland Revision)	I	15-60"	P C	1950
SRA Nonverbal Form	G	10-15"	S R A	1947

* For more detailed information concerning these and other tests, see Buros, O. K., *The Fourth Mental Measurements Year-book*, (Highland Park, N.J.: The Gryphon Press, 1953).

† Key to Symbols for Publishers:

- C T B California Test Bureau, 5916 Hollywood Blvd., Los Angeles, California.
- C H S C. H. Stoelting Company, 424 Homan Avenue, Chicago, Illinois.
- E T S Educational Testing Service, Princeton, New Jersey.
- H M C Houghton Mifflin Company, 2 Park Street, Boston 7, Massachusetts.
- P C Psychological Corporation, 522 Fifth Avenue, New York City 18, New York.
- P P Personnel Press, Inc., 188 Nassau Street, Princeton, New Jersey.
- S R A Science Research Associates, Inc., 57 West Grand Avenue, Chicago 10, Illinois.
- W B C World Book Company, 313 Park Hill Avenue, Yonkers 5, New York.

Also, we are able at the present time to see how unwarranted were some assumptions associated with our earlier conclusions concerning race differences in intelligence and other topics. Despite the abuses and limitations of intelligence testing, the practice holds a significant and important place in educational work. When test results are considered in connection with other data in arriving at an estimate of a child's nature and needs, they are of undisputed value. Considered singly, they may prove quite misleading. But treated in conjunction with developmental data covering physical, emotional, and educational growth and home background, they help us to understand children better.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

Meaning of intelligence testing.

- 1 • Formulate your own definition of intelligence, emphasizing what you consider the most important factors in intelligent behavior.
- 2 • Trace briefly the intelligence testing movement, noting particularly the contributions of the following: Galton, Binet, Thorndike, Pintner, Terman and Merrill, the Thurstones, and David Wechsler.
- 3 • Examine as many as possible of the following types of intelligence tests: verbal, nonverbal, group, individual. Be able to describe one of each type, especially the Terman-Merrill revision of the Binet. What are the advantages and disadvantages of each type of test?
- 4 • From your examination of tests and from your reading, what do you think intelligence tests really measure? What factors essential to success do they fail to measure?
- 5 • What are the values and dangers in the use of intelligence tests? Should they be administered and interpreted by school psychologists or by the classroom teacher? Give reasons. Should the I.Q. of children be known by the children themselves; by their teachers; by their parents?

Influence of heredity and environment upon intelligence.

- 1 • Why do the following studies fail to prove that heredity has a more important influence upon intelligence than environment?
 - a. High correlation between increase in blood relationship and increased similarity in intelligence test scores.
 - b. Frequency of mental superiority, peculiarity, or defect in related stocks, as, for example, in the Kallikak-Jukes-Edwards families.
 - c. Similarity of test intelligence of twins.

- 2 • Summarize briefly the findings of the following people concerning the constancy of the I.Q. and the effect of the environment upon intelligence: Bayley, Wellman, R. L. Thorndike, and Terman.
- 3 • In what ways and to what extent may a child's environment or his physical or emotional condition affect his I.Q.?
- 4 • Formulate what you consider to be a sane tentative conclusion as to the relative influence of heredity and environment upon intelligence.

Distribution and growth of intelligence

- 1 • How is intelligence distributed in a typical school population? Observe, if possible, some pupils in the classroom and on the playground, and note the wide range in ability. Check your judgment of the intelligence of a few individuals at the upper and lower limits with intelligence test scores and with the teacher's judgment.
- 2 • Trace briefly the growth of intelligence, indicating the rate of growth at different age levels. Cite examples of children whose mental growth has been irregular.
- 3 • What conditions foster mental growth? What, therefore, is the responsibility of the school in promoting mental development?

Sex and race differences in intelligence

- 1 • Summarize briefly evidence for and against the contention that men are superior to women in intelligence. Give the conclusion you draw from the evidence.
- 2 • Summarize briefly the data presented by the following for and against the contention that the white race is superior in intelligence: Brigham, Pintner, Herskovits, Witty and Jenkins.
- 3 • Why does the prevalence of lower intelligence test scores among Negroes, Indians, and immigrant groups fail to prove that these races are inferior to white groups?
- 4 • Formulate your conclusions as to what your attitude should be toward race superiority.

The mentally retarded, the gifted, and the slow-learning pupil

- 1 • Describe the physical, mental, and emotional characteristics of the mentally handicapped child; the gifted child.
- 2 • What criteria can be used in identifying the educable mentally handicapped; the gifted.
- 3 • Does an extraordinarily high I.Q. signify genius? According to Terman, what factors determine "success" above I.Q. 140?
- 4 • What are the advantages and disadvantages of special classes for the gifted; the dull; the feeble-minded?

Aptitude and aptitude testing

- 1 • What is meant by aptitude? Distinguish between special aptitude and intelligence.
- 2 • If possible, examine a few special aptitude tests. Describe and evaluate two or three.
- 3 • What are the values, limitations, and dangers in the use of tests of special aptitudes?

SELECTED REFERENCES FOR FURTHER
READING AND STUDY

Intelligence testing

- Anastasi, A., *Psychological Testing*. New York: The Macmillan Co., 1954.
- Bischof, L. J., *Intelligence: Statistical Conceptions of Its Nature*, Doubleday Papers in Psychology. Garden City, N.Y.: Doubleday and Co., Inc., 1954.
- Buros, O. K., *The Fourth Mental Measurements Yearbook*. Highland Park, N.J.: The Gryphon Press, 1953.
- Burt, C. L., *Handbook of Tests for Use in Schools*, Rev. Ed. New York: Staples Press, 1948.
- Cattell, P., *The Measurement of Intelligence of Infants and Young Children*. New York: Psychological Corp., 1940.
- Cattell, R. B., *Guide to Mental Testing*, Second Ed. London: University of London Press, 1948.
- Cronbach, L. J., *Essentials of Psychological Testing*. New York: Harper & Bros., 1949.
- Crow, L. D., and A. Crow, *Educational Psychology*, Rev. Ed. New York: American Book Company, 1954.
- Garrison, Karl C., and Stanley L. Gray, *Educational Psychology*. New York: Appleton-Century-Crofts, Inc., 1955.
- Gates, A. I., et al., *Educational Psychology*, Third Ed. New York: The Macmillan Co., 1948.
- Greene, E. B., *Measurements of Human Behavior*. New York: Odyssey Press, 1952.
- Ross, C. C., and J. C. Stanley, *Measurement in Today's Schools*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951.
- Sorenson, H., *Psychology in Education*, Third Ed. New York: McGraw-Hill Book Co., 1954.
- Stagner, Ross, and T. F. Karvoski, *Psychology*. New York: McGraw-Hill Book Co., Inc., 1952.
- Stoddard, G. D., *Meaning of Intelligence*. New York: The Macmillan Co., 1943.
- Terman, L. M., and M. A. Merrill, *Measuring Intelligence*. Boston: Houghton Mifflin Co., 1937.

- Thurstone, L. L., *Primary Mental Abilities*. Chicago: University of Chicago Press, 1938.
- Torgerson, T. L., and G. S. Adams, *Measurement and Evaluation*. New York: The Dryden Press, 1954.
- Traxler, A. F., et al., *Introduction to Testing and the Use of Test Results in Public Schools*. New York: Harper & Bros., 1953.
- Wechsler, D., *Manual for the Wechsler Adult Intelligence Scale*. New York: Psychological Corporation, 1955.
- *Manual for Wechsler Intelligence Scale for Children*. New York: The Psychological Corporation, 1949.
- The growth of intelligence and constancy of the I.Q.*
- Anderson, J. E., "The Prediction of Terminal Intelligence from Infant and Preschool Tests." *Thirty-Ninth Yearbook of the National Society for the Study of Education*. Bloomington, Illinois: Public School Publishing Company, 1940, Part I, pp. 385-403.
- Bayley, N., "Consistency and Variability in the Growth of Intelligence from Birth to Eighteen Years." *Journal of Genetic Psychology*, Vol. 75 (1949), pp. 165-96.
- and M. Oden, "The Maintenance of Intellectual Ability in Gifted Adults," *Journal of Gerontology*. Vol. 10 (Jan., 1955).
- Bell, R. Q., "An Experimental Test of the Accelerated Longitudinal Approach," *Child Development*, Vol. 25 (1954), pp. 281-86.
- Burt, C., "The Differentiation of Intellectual Ability," *British Journal of Educational Psychology*, Vol. 24 (1954), pp. 76-90.
- Clarke, A. D. B., and A. M. Clark, "How Constant Is the IQ?" *Lancet*, Vol. II (1953), pp. 877-85.
- Corsini, R. J., and Katherine K. Fassett, "Intelligence and Aging," *Journal of Genetic Psychology*, Vol. 83 (1953), pp. 249-64.
- Flory, C. D., "The Intellectual Growth of College Students," *Journal of Educational Research*, Vol. 33 (1940), pp. 443-51.
- Freeman, F. N., and C. D. Flory, "Growth in Intellectual Ability as Revealed by Repeated Tests," *Monographs, Society for Research in Child Development*, Vol. II (1937), No. 2.
- Garrison, K. C., *Growth and Development*. New York: Longmans, Green and Co., 1952.
- Gesell, A., and H. Thompson, "Twins T and C from Infancy to Adolescence: A Biogenetic Study of Individual Differences by the Method of Co-Twin Control," *Genetic Psychology Monograph* 9, Vol. 24 (1941), pp. 3-122.
- B. M. Castner, H. Thompson, and C. S. Amatruda, *Biographies of Child Development, The Mental Growth Careers of Eighty-Four Infants and Children*. New York: Hoeber, 1939.
- Goodenough, F., "The Measurement of Mental Growth in Childhood," in *Manual of Child Psychology*, edited by L. Carmichael. New York: John Wiley and Sons, Inc., 1954, pp. 385-403.

- Hofstaetter, P. R., "The Changing Composition of Intelligence: A Study in T-Technique," *Journal of Genetic Psychology*, Vol. 85 (1954), pp. 159-64.
- Honzik, M. P., "The Constancy of Mental Test Performance during the Pre-School Period," *Journal of Genetic Psychology*, Vol. 52 (1938), pp. 265-302.
- J. W. Macfarlane, and L. Allen, "The Stability of Mental Test Performance between Two and Eighteen Years," *Journal of Experimental Education*, Vol. 17 (1948), pp. 309-34.
- Jones, H. E., and H. S. Conrad, "Growth and Decline of Intelligence," *Genetic Psychology Monographs*, No. 13 (1933), pp. 223-98.
- Large, Irving, "The Influence of the Test upon the Nature of Mental Decline as a Function of Age," *Journal of Educational Psychology*, Vol. 27 (1936), pp. 100-10.
- Lowell, Frances F., "A Study of the Variability of IQ's in Retests," *Journal of Applied Psychology*, Vol. 25 (1941), pp. 341-56.
- Miles, C. C., and W. R. Miles, "The Correlation of Intelligence Scores and Chronological Age from Early to Late Maturity," *American Journal of Psychology*, Vol. 44 (1932), pp. 44-48.
- Owens, W. A., Jr., "Age and Mental Abilities: A Longitudinal Study," *Genetic Psychology Monographs*, Vol. 48 (1953), pp. 3-54.
- Thorndike, R. L., "Constancy of the IQ," *Psychological Bulletin*, Vol. XXXVII (March, 1940), pp. 167-86.
- "Growth of Intelligence During Adolescence," *Journal of Genetic Psychology*, Vol. 72 (1948), pp. 11-15.
- Wechsler, David, *The Measurement of Adult Intelligence*. Baltimore: The Williams and Wilkins Co., 1944, p. 64.
- Influence of heredity and environment upon intelligence*
- Bayley, N., "Some Increasing Parent-Child Similarities during the Growth of Children," *Journal of Educational Psychology*, Vol. 45 (1954), pp. 1-21.
- Burks, B. S., "Statistical Hazards in Nature-Nurture Investigations," *Twenty-Seventh Yearbook of the National Society for the Study of Education*, Part I (1928), pp. 9-33.
- and A. Roe, "Studies of Twins Reared Apart," *Psychological Monographs*, Vol. 63 (1949), No. 300.
- Carter, H. D., "Case Studies of Mature Identical Twins," *Journal of Genetic Psychology*, Vol. 44 (1934), pp. 154-74.
- , "Family Resemblances in Verbal and Numerical Abilities," *Genetic Psychological Monographs*, Vol. 12 (1932), No. 1.
- , "Ten Years of Research on Twins: Contributions to the Nature-Nurture Problem," *Thirty-ninth Yearbook of the National Society for the Study of Education*. Bloomington, Illinois: Public School Publishing Co., 1940, Part I, pp. 235-55.
- Goodenough, F. L., "New Evidence on Environmental Influence on Intelligence," *Thirty-ninth Yearbook of the National Society for the Study of*

- Education, Bloomington, Illinois: Public School Publishing Co., 1940, Part I, pp. 307-65.
- Hirsch, N. D. M., *Heredity and Environment*. Cambridge: Harvard University Press, 1930.
- Jones, H. E., "The Environment and Mental Development," *Manual of Child Psychology*, edited by L. Carmichael. New York: John Wiley and Sons, Inc., 1954, pp. 631-96.
- Lawrence, E. M., "An Investigation into the Relation between Intelligence and Inheritance," *British Journal of Psychological Monographs*, Supplement (1931), Vol. 16, pp. 1-80.
- Leahy, A. M., "Nature-Nurture and Intelligence," *Genetic Psychological Monographs*, Vol. 17 (1935), pp. 235-308.
- McCandless, B., "Environment and Intelligence," *American Journal of Mental Deficiency*, Vol. 56 (1952), pp. 674-91.
- National Society for the Study of Education, *Thirty-Ninth Yearbook of The National Society for the Study of Education*, Parts I and II, "Intelligence: Its Nature and Nurture," (1940); and *Twenty-Seventh Yearbook of the National Society for the Study of Education*, Part I, "Nature and Nurture, Their Influence upon Intelligence," (1928). Bloomington, Illinois: Public School Publishing Company.
- Newman, H. H., F. N. Freeman and K. J. Holzinger, *Twins: A Study of Heredity and Environment*. Chicago: University of Chicago Press, 1937.
- Nisbet, J., "Family Environment and Intelligence," *Eugenics Review*, Vol. 45 (1953), pp. 31-40.
- Schwesinger, G. C., *Heredity and Environment*. New York: The Macmillan Co., 1933.
- Skodak, Marie, "Mental Growth of Adopted Children in the Same Family," *Journal of Genetic Psychology*, Vol. 77 (1950), pp. 3-9.
- Speer, G. S., "Intelligence of Foster Children," *Journal of Genetic Psychology*, Vol. 57 (1940), pp. 49-55.
- Woodworth, R. S., *Heredity and Environment: A Critical Survey of Recently Published Material on Twins and Foster Children*. New York: Social Science Research Council, 1941.
- Sex and race differences in intelligence*
- Benedict, R., *Race: Science or Politics*. New York: Modern Age Books, 1940.
- Clark, W. W., "Sex Differences in Mental Abilities Among Students of High Intelligence," *California Journal of Educational Research*, Vol. 5 (March, 1954), pp. 90-93.
- Eells, K., et al., *Intelligence and Cultural Differences*. Chicago: University of Chicago Press, 1951.
- Klineberg, O., *Race Differences*. New York: Harper & Bros., 1935.
- Mead, M., "Research on Primitive Children," in *Manual of Child Psychology*, edited by L. Carmichael. New York: John Wiley and Sons, Inc., 1954.

- Norman, Ralph D., "Sex Differences and Other Aspects of Young Superior Adult Performance on the Wechsler-Bellevue," *Journal of Consulting Psychology*, Vol. 17 (December, 1953), pp. 411-418.
- Terman, L. M., and L. E. Tyler, "Psychological Sex Differences," in *Manual of Child Psychology*, edited by L. Carmichael. New York: John Wiley and Sons, Inc., 1954.
- Wellman, B. L., "Sex Differences," in *Handbook of Child Psychology*, Rev. Ed., edited by C. Murchison. Worcester, Mass.: Clark University Press, 1933.
- Witty, P. A., "Relative Frequency of Gifted Boys and Girls in the Secondary School," *Educational Administration and Supervision*, Vol. 20, No. 8 (1934), pp. 606-12.
- , and H. C. Lehman, "Racial Differences: The Dogma of Superiority," *Journal of Social Psychology*, Vol. I. No. 3 (1930), pp. 394-418.
- The feeble-minded and the dull*
- Benda, C. E., and D. Durling, "Mental Growth Curves in Untreated Institutionalized Mongoloid Patients," *American Journal of Mental Deficiency*, Vol. 56 (1952), p. 578. Also, C. E. Benda, "Psychopathology of Childhood," *Manual of Child Psychology*. Edited by L. Carmichael. New York: John Wiley and Sons, Inc., 1954, pp. 1115-61.
- Charles, D. C., "Ability and Accomplishments of Persons Earlier Judged Mentally Deficient," *Genetic Psychology Monographs*, Vol. 47 (1953), pp. 3-71.
- Doll, E. A., "I.Q. and Mental Deficiency," *Journal of Consulting Psychology*, Vol. IV, No. 2 (March-April, 1940), pp. 53-61.
- Ingram, C., *Education of the Slow Learning Child*, Rev. Ed. New York: The Ronald Press, 1953.
- Kirk, S. A., and G. O. Johnson, *Educating the Retarded Child*. New York: The Houghton Mifflin Co., 1951.
- and O. P. Kolstoe, "The Mentally Retarded," *Review of Educational Research*, Vol. 23 (1953), pp. 400-16.
- Martens, E. H., *Introduction to Group Activities for the Mentally Retarded*, Office of Education, Bulletin No. 7. Washington, D.C.: U.S. Government Printing Office, 1933.
- *Teachers' Problems with Exceptional Children: III. Mentally Retarded Children*, U.S. Office of Education, Pamphlet No. 49, Washington, D.C.: U.S. Government Printing Office, 1934.
- National Society for the Study of Education, *Thirty-Ninth Yearbook of the National Society for the Study of Education*. Parts I and II, "Intelligence: Its Nature and Nurture" (Bloomington, Illinois: Public School Publishing Company, 1940).
- Pintner, R., "Feeble-minded Child," *Handbook of Child Psychology*, edited by C. Murchison. Rev. Ed. Worcester, Mass.: Clark University Press, 1933.
- Sarason, S., *Psychological Problems in Mental Deficiency*. New York: Harper & Bros., 1949.

- Tredgold, A. F., *Mental Deficiency*, Sixth Ed. Baltimore: The Williams and Wilkins Co., 1937.
- Wallin, J. E. W., *Education of Mentally Handicapped Children*. New York: Harper & Bros., 1955.
- White House Conference on Child Health and Protection, Section III, Education and Training, Committee on Special Classes, *Handicapped and Gifted*. (New York: D. Appleton-Century Company, 1931).
- Witty, P. A., and L. P. Thorpe, "Personality Development in the Feeble-minded and the Gifted," in *Mental Hygiene in Modern Education*. Edited by P. A. Witty and C. E. Skinner. New York: Farrar and Rinehart, 1939.

The gifted child

- Havighurst, Robert, et al., *A Survey of the Education of Gifted Children*. Chicago: University of Chicago Press, 1955.
- Hildreth, G., et al., *Educating Gifted Children*. New York: Harper & Bros., 1952.
- Hollingworth, L. S., *Gifted Children*. New York: The Macmillan Co., 1926.
- *Children Above IQ 180*. New York: World Book Co., 1942.
- Miles, C. C., "Gifted Children," *Manual of Child Psychology*. Edited by L. Carmichael. New York: John Wiley and Sons, Inc., 1954.
- Terman, L. M., et al., *Genetic Studies of Genius* (Stanford, Cal.: Stanford University Press, 1925 and 1930), Vols. I and III.
- and B. S. Burks, "The Gifted Child," in *Handbook of Child Psychology*. Edited by C. Murchison. Worcester, Mass.: Clark University Press, 1933.
- and M. H. Oden, "The Gifted Child Grows Up." *Genetic Studies of Genius*, Vol. IV. Stanford, Cal.: Stanford Press, 1947.
- Witty, P. A., "A Study of One Hundred Gifted Children," *University of Kansas Bulletin in Education*, Vol. II, No. 7 (1930).
- (ed.), *The Gifted Child*. Boston: D. C. Heath and Co., 1951.
- "Evidence Regarding the Nature of Intelligence from the Study of Superior Deviates," *Addresses and Discussions Presenting the Thirty-Ninth Yearbook of the National Society for the Study of Education, Intelligence: Its Nature and Nurture*, Bloomington, Illinois: Public School Publishing Company, 1940, pp. 23-30.
- "Some Considerations in the Education of Gifted Children," *Educational Administration and Supervision*, Vol. XXVI (October, 1940), pp. 512-22.
- Worcester, D. A., *The Education of Children of Above Average Mentality*. Lincoln: University of Nebraska Press, 1956.

Aptitudes and Aptitude Testing

- Bingham, W., *Aptitudes and Aptitude Testing*. New York: Harper & Bros., 1937.
- Harrall, W., "Predicting Success of Law School Students," *American Law School Review*, Vol. 9 (1939), pp. 290-93.

- Hoffman, W. S., "Rank in College and the Medical School," *School and Society*, Vol. 47 (1938), p. 314.
- Hull, C. L., *Aptitude Testing*. New York: World Book Co., 1928.
- Mursell, J. L., *Psychological Testing*. New York: Longmans, Green and Co., 1947.
- Stuit, D., et al., *Predicting Success in the Professional Schools*. Washington, D.C.: American Council on Education, 1949.
- Super, D. C., *Appraising Vocational Fitness*. New York: Harper & Bros., 1949.

6

INDIVIDUAL DIFFERENCES AND SCHOOL ADJUSTMENTS

Introduction

When meeting his class for the first time, the beginning teacher is likely to observe and think of the pupils as being very much alike. As he gains experience in the classroom he will become increasingly conscious of the fact that children are very different. Each child is unique. Differences in height, weight, and maturity can be noted. Some children will appear active, talkative, always busy; others will talk but little. Some will appear happy; others will seem afraid or sad.

Behavior, intelligence, drive, and physique are but a few of the clues to what can be expected of children, what the home situation is like, or what the child thinks of himself. With study and classroom experience the teacher learns to assess the abilities of his pupils with increasing accuracy. Most important of all, he learns to accept the fact that not only do children differ widely in their abilities, interests, aspirations, and so forth, but also that such differences are often an asset. It is equally important for the teacher to learn how to adapt the work of the school to individual needs and abilities. But before considering how the school can meet the problem of individual differences in a psychologically defensible manner, some further consideration should be given to how children differ.

Areas of Individual Differences

PHYSICAL AND DEVELOPMENTAL DIFFERENCES

Let's start with the most easily observed differences—physical and developmental. Look at any room full of children and you will be struck by the variation in height, weight, and body build. You will probably see examples of the short-and-stout and the tall-and-thin.

Now line them up in size place and divide them into six groups with the tallest at one end and the shortest at the other. If yours is a typical class group, say, of 36 pupils, it will look like this:

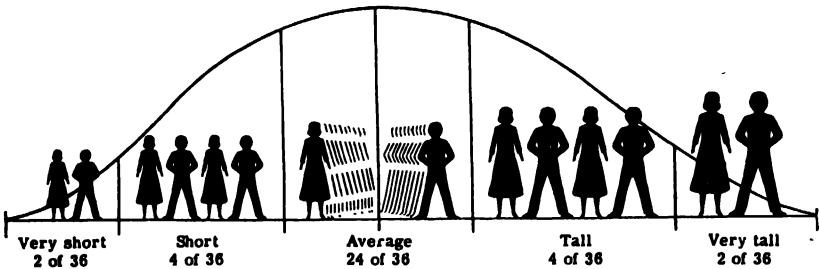


Fig. 6. Hypothetical distribution of children according to height in a typical class group of 36 pupils.

Note that most children (24) cluster about the average; few will be found at the extremes. Note that the word typical was stressed. The group will be distributed in the pattern shown in Figure 6 only if it resembles a very large group of children of the same age. Some classes may have more tall pupils, others more short ones. Measurements of large groups with respect to any one trait usually follow the same bell-shaped curve, called the *normal curve*.

What is the significance of these physical differences to you as a teacher? Physical status is an important element in relationships among children, particularly boys. Since physical growth is so important a developmental task of childhood and adolescence, leaders in adult sports are almost universally regarded as heroes. Larger, stronger boys usually have the advantage in competitive games and sports, and in fighting. For this reason, they slip more easily into the role of leader. The obese and the very small are usually unable to compete physically and tend to be isolated or ridiculed.

But human relationships are more complicated than the above statements indicate. Thus, good muscular coordination resulting in speed and skill may partially compensate for size and strength, particularly among pre-adolescents. Though among older boys size and strength are important psychosocial factors because they are associated with manliness, beyond a certain point they can be a social handicap. Excessive height or weight may be even more serious a problem among adolescent girls.

Puberty is a period especially fraught with difficulty. Boys and girls who lag behind in the maturation process may be painfully aware of the physical, social, and personality changes that have taken place in their friends, who were children like themselves only yesterday but who are adults today. It is no wonder that the adolescent is preoccupied with his body and growth.

Any physical deviation from the normal is likely to arouse feelings of being "different." To the extent that he feels different or inferior, whether or not that feeling has any basis in reality, the individual may react defensively in ways that can become permanent patterns of personality. The supposed attitude of others thus plays an important role in acceptance of self. In turn, acceptance of self is related to acceptance of others.

In the field of adjustment problems, it is not the deviation itself but the individual's attitude toward the supposed deviation that matters. A good example is afforded by the case of two sisters. "Mary," said her mother, "has beauty. Diane has charm." Because the mother showed clear-cut preference for Mary, Diane, who had just average good looks, came to regard herself as ugly. This attitude toward self affected her entire life. Under other circumstances, she might have acquired a different, more realistic image of herself—that she was about as good-looking as most other girls.

INTELLIGENCE

The first day you meet your class you will form impressions of the children's intelligence. If it is an unselected group, you will easily observe the bright, responsive youngsters. Others will seem unresponsive and dull.

Check the pupils' I.Q. scores on their record cards and you may get a surprise! You will probably find that among the less communicative are pupils with high I.Q.'s. Conversely, among the more expressive are a few of the less bright.

Collect the intelligence quotients for the class. If the group is typical, the scores will take the form of the bell-shaped curve, such as the one obtained by Terman in Fig. 7. The scores might range from a low of 80 to a high of 130, or even higher. Most scores, however, will cluster about 100.

As a teacher, you will have to adapt your teaching to the ability of each child. Too often teachers gear their instruction to the middle

50 per cent. This procedure means that the least able fourth of the class will have difficulty in achieving levels of performance of the rest. For them there is nothing but frustration and failure. On the other hand, the brightest fourth will not be challenged sufficiently. They may develop consistent habits of underachievement or they may become bored and mischievous. These are the cases of "hidden failure."

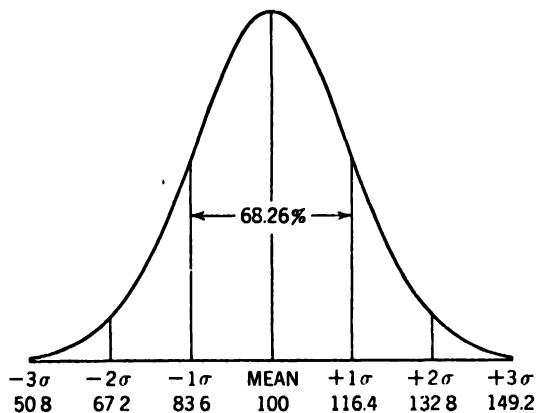


Fig. 7. Normal distribution of intelligence quotients (after Terman).

Adapting your instruction to the needs and abilities of individuals is not an easy task. But you must recognize the existence of the problem before you can do anything about it. Specific suggestions on the adjustment of teaching to individual differences in learning ability will be offered later in this chapter.

Achievement

Before you begin to teach your new class, you will want to find out where it now stands with respect to achievement. If the results of standardized tests have been recorded, tabulate and study them.

Wide ranges in achievement are usually found in reading and arithmetic. Studies of school children have shown that in the fourth grade, for example, the range in grade scores may be as much as seven years. By the ninth and tenth grades, the range may be considerably wider.

Figure 8 presents graphically the achievement on a battery of stand-

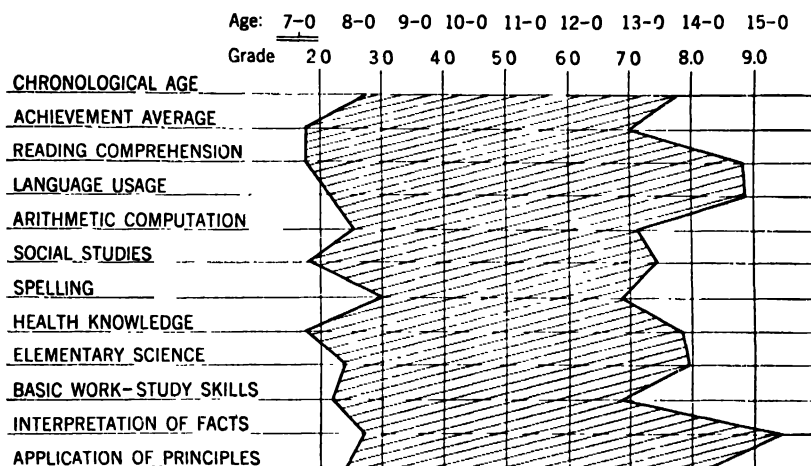


Fig. 8. The range of individual differences in achievement in a fourth-grade class.

ardized tests in the fourth grade. Here achievement ranges from below the average of children in the second grade up to almost the seventh grade. In reading comprehension, the range of individual differences extends from second to ninth grade, and in arithmetic

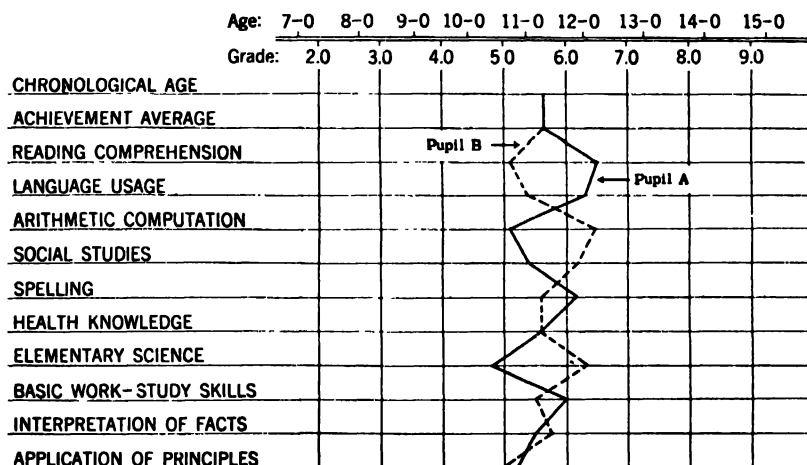


Fig. 9. Profiles of two pupils having approximately the same average achievement.

computation from third to seventh grade. Similar interpretations may be made for the other tests.

Group differences in achievement are not the only important ones. Differences in the performance of any one child are important, too. Figure 9 compares the profiles of two pupils in the same battery of tests. The two are about equal in intelligence and in average achievement. Yet one is notably superior in language arts, such as reading, spelling, and language usage, while the other is more proficient in arithmetic and science. Both are about equal in health knowledge.

How do these differences arise if the pupils are about the same in intelligence? Intelligence is really a composite of different mental abilities. One of these two pupils is superior in the verbal component of intelligence, the other in numerical. Other factors are probably responsible as well—early experiences, the quality of instruction, and interest.

What are the implications of individual differences in achievement for you as a teacher? Three points must be recognized before implications are drawn. The first is the wide range of differences in achievement among individuals in a class. Second, and of equal importance, is the fact that many pupils are approximately equal in achievement. Third, there will be differences in the achievement of each pupil in different subject areas. The implications should now be clear: The class cannot be treated as a unit consisting of similar parts. Modern methods of teaching must combine group and individual instruction if teaching is to be effective. Provision for individual differences means that not all children will be given the same homework assignment or will engage in the same activities at the same time or attempt to master identical concepts, meanings, and skills at the same time.

THE RELATION OF ACHIEVEMENT TO INTELLIGENCE

In general, the more intelligent pupils achieve the higher scores in school tests. But education would be a much simpler process if pupils always achieved according to their capacities. Thus, a fifth grade pupil with an I.Q. of 140 would be expected to earn seventh grade achievement scores in such basic subject areas as reading comprehension and arithmetic computation. The expectancy is based on the pupil's ability to proceed $\frac{140}{100}$ (or $\frac{7}{5}$) times as rapidly as the aver-

age pupil of 100 I.Q. By grade 10, he should be functioning on the college level. That this is frequently not the case may be attributable to lack of stimulation or lack of opportunity to proceed at his own rate. Underachievement may also be due to emotional problems of various kinds and to the subtle influences of classmates and home.

Similarly, there are pupils who are consistent overachievers, that is, those who do better at school work than their scholastic aptitude would warrant. In these cases, a great amount of time and energy is expended to make the achievement possible.

Studies have shown that children from middle class homes are subject in the home to considerable pressure for accomplishment. They are taught to aim high, to be ambitious, persevering, and highly competitive. One investigator found that there was less agreement between what middle class youths said their parents expected of them and what these youths actually did compared with the agreement between the lower-class groups of youths and their parents.¹

A typical first reaction to a low mark by a child from such a home is: "What will my mother say?" The anxiety caused by the endless need to attain impossibly high goals may produce a rigid, compulsive personality eternally dissatisfied with self.

There is another type of achiever who is more successful in deriving satisfaction from achievement. This type is the boy or girl who compensates for a physical defect by proficiency in studies or for an unhappy home life by extensive reading. Sir Isaac Newton is said to have turned to mathematics as a boy to compensate for his inability to beat a bullying classmate in a fight. Compensation by way of achievement may be a satisfactory solution so long as it is no substitute for a basic human need.

As an experienced teacher, you will look for evidence to distinguish the various types of achiever. You will offer immediate help to the less complex problems, and refer the more complex ones to the proper agencies.

¹ For discussions of social-class and relation of social-class to behavior consult the following: (1) Davis, A., *Social-Class Influences on Learning* (Cambridge, Mass.: Harvard University Press, 1949); (2) Havighurst, R. J. and H. Taba, *Adolescent Character and Personality* (New York: John Wiley and Sons, 1949); (3) Hollingshead, A. B., *Elmtown's Youth* (New York: John Wiley and Sons, 1949); (4) Warner, W. L., et al., *Who Shall be Educated?* (New York: Harper and Brothers, 1944); (5) Davis, A. and John Dollard, *Children in Bondage* (Washington, D.C.: American Council on Education, 1940).

Attitudes: Cultural and Home Influences

Teachers are less immediately concerned with pupils' attitudes than with other aspects of their development. Attitudes are not easy to measure; their influence is subtle; they closely interlace with interests, achievement, and personality. Yet they are significant in deciding the kind and extent of the learning that takes place.

For example, pupils in a farm community will not have a favorable attitude toward a social studies text that attacks price supports for agricultural products. Pupils from an urban housing project inhabited by members of a trades union will not be receptive to learning if their teacher has an anti-labor attitude.

What is meant by *attitude*? Attitude is usually defined as a generalized disposition toward a group of people or an institution. It is used in connection with minority groups, nationalism, political orientation, and so forth. But it is important to remember that an attitude is always emotionally toned. Because of this, attitudes extend to all activities—such as reading—to people in general, and even to self.

ATTITUDES TOWARD EDUCATION

Don't assume that your pupils' attitudes toward education are determined entirely by intelligence—that the more intelligent will always be the more eager to learn. Socioeconomic status plays a part,² but a complex one. Middle class parents teach their children the importance of getting ahead through their own efforts. They teach social conformity. They are better able to supply books and magazines, and are more likely to provide travel and other educational experiences away from home. The attitude toward education of children from these homes is likely to be favorable. On the other hand, a boy who is certain to step into his father's business may not have the same incentive to study as his classmates.

Lower-class parents generally cannot provide the same opportunities and educational experiences for their children. A child from a lower class home who knows he must begin to work for a living as soon as he can get his working papers may not have the best attitude toward education. On the other hand, in American society education has always been one means by which persons in the lower strata have been able to advance themselves. Consequently, respect for educa-

² Havighurst, Robert J., and Hilda Taba, *Adolescent Character and Personality* (New York: John Wiley and Sons, Inc., 1949).

tional achievement will be strong in a good percentage of lower class homes, though there will be wide differences according to region and in racial and national sub-groups in this regard. These are subtle individual differences that the teacher should learn to recognize in planning teaching methods.

ATTITUDE TOWARD AUTHORITY

An attitude that will affect you, as teacher, is the individual pupil's attitudes toward authority. You are an authority figure to the child, whether or not you want to be. The child's attitude toward you will be influenced largely by the way in which authority has been exercised in the home. The way in which you exercise your power will have considerable influence on the development of permanent attitudes toward authority.

The attitude toward authority is acquired early and tends to persist. Stagner³ studied this attitude in college men through their responses to pictures. He found that "pro-authority men are more concerned about power, more in need of a definite relationship to parents, more ethnocentric (identifying with the dominant group), less sympathetic. Anti-authority men perceive authority figures as inhibiting and threatening."

Attitudes toward authority differ partly because homes differ in democratic living, in permissiveness, and in acceptance of developmental levels. In a democratic home, children share in decisions in matters relating to them. In such a home, sometimes the interests of children, at other times those of parents, are paramount. Children are given freedom for self-initiated activity within broad limits. The parents do not use "reason" to frustrate the children continually. They do not foist upon the children their adult tastes, standards, and values. They do not try to keep the child dependent all his life. A democratic home, based on respect for the individual, is not likely to be harsh in discipline or to favor some children above others. At the other end of the scale is the autocratic home. There are many intermediate positions in the scale.

The kind of power relationship in the home is revealed most dramatically during adolescence. During this period, when the young person must begin to establish himself as a separate individual and

³ Stagner, Ross. "Attitude toward Authority." *Journal of Social Psychology*, 40 (1954), pp. 197-210.

take the first steps toward independence as a mature adult, some young people find themselves in open revolt against parental authority, while others become completely submissive. Still others alternate between submission and revolt. These are individual differences in attitude that you, as teacher, must recognize.

ATTITUDES AND YOU

What has the foregoing discussion of attitudes to do with you as a teacher? What school adjustments can be made for differences in attitude?

First, it should be clear that the child will take with him to school a general receptivity to education that is a product of home, social class, and community influences. Knowing something of these influences will help you set up realistic standards of the amount of learning that can be expected.

Second, you are involved in the kind of social interaction that takes place in class. When certain children show reluctance to work in groups or committees with others, you are in a better position to understand what is taking place and how to deal with the situation. In addition, knowledge of attitudes will help you to choose suitable educational experiences and materials for different children.

Third, as one of America's teachers, you are committed to the achievement of one of the primary goals of education—the development of democratic attitudes and democratic living.

HOW CAN YOU TEACH DESIRABLE ATTITUDES?

Before your part in teaching attitude is discussed, let us frankly recognize your limitations. In a study of data from the Purdue Opinion Panel on changes in attitudes toward social discrimination among a nation-wide sample of high school students, Mainer ⁴ found that the success of intergroup programs in schools depended on the following variables: (1) geographic location, (2) home environment and religion, (3) age and grade in school, (4) intelligence and verbal ability, (5) personality traits relating to conformity and authoritarianism. These are formidable factors indeed, particularly if some exert their influence in the direction opposite to yours. But there is at least one

⁴ Mainer, Robert E., "Attitude Change in Intergroup Education Programs," *Studies in Higher Education, Purdue University*, No. 83 (1954).

powerful influence always on your side: the great prestige of the school. This fact should give you courage.

Within the limitations we have just considered, what can you do?

1. Serve as a worthy model of desirable attitudes. Have an honest look at yourself. Try to discover what attitudes in you need correction; then try to change them. Remember that even a chance remark or a trivial classroom incident may affect pupils, particularly those who identify with you.

Study the dynamics of group behavior. Apply in the classroom the principles you learn.

Avoid arbitrary decisions, inconsistent patterns of discipline, use of your authority to dominate and to make pupils dependent, and harsh or humiliating remarks.

2. Try to present all the pertinent facts in a given area—for example, attitude toward a particular minority. Facts can help dispel ignorance and prejudice. This method of attitude education is more effective with younger people. After undesirable attitudes have become fixed through emotional conditioning, the intellectual approach works less well.
3. Plan educational experiences and activities to overcome an undesirable attitude or to inculcate a desirable one. Doing is more effective than being lectured at. To overcome children's provincial fear of a minority group, have them not only study the group—its history and contributions—but also (and this is more important) meet, play with, or work with members of the group. If there is inadequate preparation, this method may backfire and strengthen prejudice rather than weaken it.
4. Use emotional conditioning. Persons prominent in the world of entertainment and sports have visited schools in the fight against prejudice. This mechanism of identification has been found to be effective with some pupils. Literature and drama via radio, TV, and motion pictures are especially effective because of their strong emotional appeal. Unfortunately, they are sometimes used to strengthen harmful stereotypes. Though educators cannot control the mass media of communication, they can and should carefully screen all such media within the school to prevent reinforcement of harmful stereotypes and attitudes.

Personality

Intelligence, achievement, attitudes, interests, motivation, modes of adjustment—all these and more constitute personality. Personality is complex; its differences among individuals are wide. Intelligence, as we have seen in Chapter 5, can be measured by a test and converted into a score that will be a fairly good indicator of academic aptitude.

We can then study the variability of a group in intelligence in the now-familiar normal curve of distribution. We can do the same thing for achievement in certain subjects and in specific attitudes. Moreover, we can say with some confidence that persons getting the same score on these tests are fairly similar with respect to the characteristic being measured. But we can't do this with personality. In everyday life, we usually think of personality as being made up of traits—many traits. These traits are outward signs of dynamic forces that act and interact in an infinite number of ways. That is why the integration of these traits—or personality—is never the same in any two individuals. Personality is unique.

Although we can't convert personality as a whole into a score, we can compare pupils with respect to certain identifiable parts of personality which we can call by the much-argued term of factor or trait. By a mathematical method called factor analysis, Cattell⁵ identified 171 personality traits which were then reduced to 35 "clusters" of personality variables and then further combined to form 12 "primary source traits" of personality. Here are a few examples taken from the 35 clusters:

<i>Positive Pole</i>	<i>Negative Pole</i>
1. Self-assertive	1. Self-submissive
2. Intelligent, analytical	2. Unimaginative, stupid
3. Wise, mature	3. Dependent, silly
4. Changeable, frivolous	4. Thoughtful, stoic, reserved
6. Hard, cynical	6. Kindly, gentle, idealistic
11. Strong-willed, conscientious	11. Indolent, impulsive
15. Cheerful, enthusiastic, witty	15. Unhappy, frustrated, dour
18. High-strung, expressive	18. Phlegmatic
24. Hostile, paranoid	24. Trustful, good-tempered

Do not think of these traits as consisting only of two poles. Think rather of a continuous scale, such as the protractor used in geometry, in which the opposite poles are the extreme positions, with many degrees of the given trait between the two.

If you measured a very large group of children on the traits comprising the various clusters, you would find relatively few children at the extremes and most children occupying positions somewhere near the middle. The pupils in your own class could be distributed along

⁵ Cattell, Raymond B., *Description and Measurement of Personality* (Yonkers-on-Hudson: World Book Company, 1946).

a scale for each trait. And the personality of your class could be described by a large series of such curves as shown in Figure 10. Note that they will not be normal curves in most instances, because your class is not likely to be a representative sample of the entire school population. Thus, many of the curves would lack "tails" or be skewed in one direction or the other.

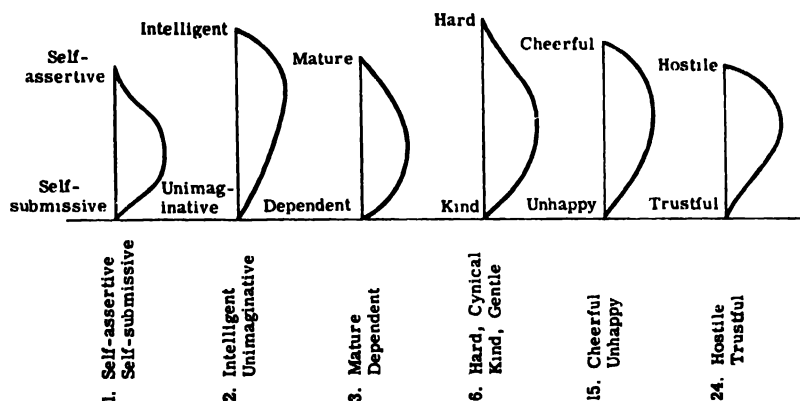


Fig. 10. A series of personality curves.

As a teacher, you will not find it particularly useful to know how your class varies with respect to a large number of specific and unrelated traits. You will be more interested in knowing how well the positive traits are integrated within the personality structure. What is meant by a well-integrated personality? The following are some of the main criteria:

1. Acceptance of self—has feelings of personal worth; has confidence in his abilities; recognizes and accepts his limitations; can be different in some ways; can recognize his own feelings.
2. Acceptance by others—is loved and wanted by his parents; has friends; works smoothly with others; can function in different roles in leader-follower situations.
3. Efficiency in studies or work—is able to concentrate; works up to capacity; completes tasks; is steady, responsible, and reliable.
4. Freedom from inner conflicts—enjoys work and play; is realistic; has good health; is free of nervous symptoms; is mature in behavior and judgment; shows emotional control; is happy.

You will be interested in the personality characteristics of your pupils as these characteristics emerge from reactions to the environ-

ment. What characteristic modes of behavior do different pupils select in certain situations? Why do some children go to pieces on a test? Why does the performance of some deteriorate⁶ as soon as they believe (rightly or wrongly) they are not doing well? You need to know the various mechanisms of adjustment to which children can resort in situations involving success-failure.

Let us take two common situations in childhood. In the first, the child is trying to accomplish a task which is difficult for him, for example, build a tower of blocks, repair a toy, or, later on, operate a movie projector. In the second, he is trying to join a group of children at play or be accepted by others. Assume he is experiencing thwarting in any of these situations. Here are some of the ways in which he might react:

1. *Perseveration.* The individual continues to perform the unsuccessful action, regardless of the fact that it failed the first few times, in the hope that this time it will work.
2. *Random behavior.* Not understanding what is wrong, engages in trial-and-error behavior, looking for a chance or magical solution. For example, when the movie projector continues to flutter, he planlessly turns every knob and pulls every lever.
3. *Rational reinterpretation.* In this approach, the individual re-appraises the situation and chooses a new response that will have a better chance of working.
4. *Anger or aggression.* The child loses his temper, cries, throws down the frustrating object violently, or attacks other children physically or verbally.
5. *Displacement.* He may not be able to attack immediately or directly—if he is confronted by bigger children, his parents, or school failure. The tension builds up, and the anger is displaced to a substitute. He may punch a smaller schoolmate or “kick the cat.”
6. *Suppression.* This consists of blocking emotional expression entirely. Suppression is unfortunately considered a virtue by many people. Continual suppression can be as dangerous as tying down a safety valve.
7. *Withdrawal.* The pupil gives up his efforts completely. He may watch from the sidelines or “retire into his shell.” Regression is one form of withdrawal. Through this mechanism one goes back to a less mature level for satisfaction. Thus the older child for whom the delight of eating is the most cherished activity in life has regressed to a period when the pleasure in food was paramount and life's problems were insignificant.

⁶ Waterhouse, I. K., and I. L. Child, “Frustration and the Quality of Performance: III. An Experimental Study,” *J. Personality*, 22 (1953), pp. 298–311.

8. *Fantasy.* The individual accomplishes in his daydreams what he fails to do in real life. In the situations outlined previously, he may become the builder of a spaceship or the more popular child at school.
9. *Rationalization.* Through this device, the individual uses "good" reasons to explain away the frustrating situation. To explain his social failure, he might say that spending time with friends was a waste. Thus rationalization often takes the form of "sour grapes."
10. *Projection.* The child reads into the behavior of others the trait or motive that is dominant in himself. The inability to make friends may be seen as hostility in other children.
11. *Attention-getting.* The child may "show off" or clown in order to win the attention he cannot get in other ways.
12. *Compensation.* The pupil makes up for failure in one area by success in another. Thus the pupil deficient in the manual or social skills required in the situations set forth earlier in this section may compensate by turning to some other activity—reading, for example.
13. *Illness.* Illness can be a mechanism of avoidance: avoiding competition or an effort that could lead to intolerable failure. It can be a means of gaining sympathy or affection otherwise withheld. It can be the result of sustained inner conflicts, as in asthma or in some disturbances of the skin.
14. *Worry.* Worry is usually an unproductive substitute for effective action to solve one's problems. The chronic worrier unconsciously prefers to hold on to his worries rather than risk failure through a more adjustive response.

With one exception, the personality adjustments briefly reviewed here may be seen as almost entirely undesirable ones. But some have their positive sides as well. For example, certain types of aggressive behavior have a healthy protective value—as in the case of a defense against an unprovoked attack. The individual who cannot ever respond to persistent frustration or to unprovoked hostility is more likely to suffer mental disturbance than one who can so respond. Similarly, to withdraw when one's abilities are far below one's aspirations can be a healthy defensive reaction. Another point to remember is that almost everyone uses some of the less mature adjustments at one time or another. It is only when they are persistent substitutes that correction is indicated.

If you are alert to events in the classroom, you will find many clues relating to personality and to the different adjustment mechanism. To what constructive use can you put your observations? As was pointed out in the discussion of attitudes, it is important first of all to recognize your limitations in this very complex area. Remember

that many maladjustments are rooted in the home. Sears⁷ and co-workers investigated the nature of children's drives toward dependency and aggression by studying their mothers' rearing practices. They discovered that the kind and amount of frustration and punishment experienced by the child largely determine the character of the drives of dependency and aggression. Then again, no one expects the teacher to be a clinical psychologist or a psychotherapist; most of your energies should be devoted to teaching. These limitations reduce the area of operation, but they still leave a good deal to do; and what remains to be done can be of crucial importance in the life of the school child. The following steps can be of help to pupils already maladjusted and may prevent in others those maladjustments to which the school may contribute:

1. Refer to your supervisors and to specialized guidance personnel those pupils who show suspicion of physical deviations or such behavioral symptoms as excessive timidity or withdrawal, instability, or rejection by other children.
2. Encourage wide participation in classroom activities by all children. Don't permit a few to monopolize activities or attention.
3. Provide diversity of activity so that every child may have a chance to experience success in something and the feeling of belonging to the group.
4. Self-expression is therapy. Give children the chance to express emotion through the creative arts—writing, drawing, dramatics, and so forth. The child who can't hit back at suppressive parents can find a healthy outlet in pounding a lump of clay.
5. Try to eliminate sources of fear and tension⁸ in the classroom, especially those suggested by Odenwald, such as excessively high standards of achievement, sharp competition, feelings of shame and humiliation, favoritism, harsh discipline, rejection.
6. Try to establish a warm personal relationship with children while setting reasonable limits to the kind of behavior permitted. This relationship with the teacher is indispensable in bringing about desirable personality changes in pupils. Showing a little personal interest often goes a long way with behavior problems.
7. Diagnose subject disabilities and help pupils to correct them. Such disabilities can be powerful sources of frustration and anxiety.
8. Stress the problem-solving approach in all learning. Use classroom incidents to help pupils acquire more mature methods of solving

⁷ Sears, R., J. W. Whiting, V. Nowlis, and P. Sears, *Genetic Psychological Monographs*, 47 (1953), pp. 135-236.

⁸ Odenwald, Robert P., "Mental Health and the Schoolroom," *Education*, 75 (1954), pp. 18-28.

problems. Through discussion of the problems and behavior of others in literature and in life, pupils will gain insight into the solution of their own problems.

9. Get to know the parents and try to interest them in school affairs. The pupils will benefit from their interest. But don't try to change them too quickly.
10. Try to be objective about your own personality in the classroom. If there are any habits or traits that impair your relationship with the children or the emotional climate of the schoolroom, try to change them.

The Meaning and Nature of Individual Differences

In past years, the school was primarily interested in individual differences insofar as they were related to mastery of subject matter—intelligence and achievement. While the school has not given up this emphasis, the modern school also devotes its attention to other competencies and skills which all adults should have despite differences in vocational goals. Today we think of individual differences as including any measurable aspect of the total personality.

We have briefly considered two characteristics of individual differences—*variability* and *normality*. Measure any group with respect to a given trait, and the group will be found to vary. Considerable variation will also be found among specific traits in any one individual. Experience has shown that for most traits extremely high scores and extremely low scores are relatively few in number. For this reason, test scores and trait measurements usually take the form of the normal probability curve.

Another characteristic you should be aware of is *differential rates of growth and learning*. Development does not start at the same time for all individuals, nor does it proceed uniformly for all. Whether it is the age at which children begin to talk or the age when they enter puberty, there will be differences in maturation. In both physical growth and learning there may be sudden advancements for some children. Differential rates of growth are really another instance of the variability of human traits.

Still another characteristic of individual differences is the *interrelationship of traits*. A difference in one trait area—achievement, intelligence, temperament, and so forth—is bound to affect others. Thus a child's feeling that he is rejected by his parents can affect his interest

and achievement in school, his personality, his functional intelligence, and even his physical condition. In turn, these changes can interact with the others.

Finally, there is the influence of *hereditary and environmental factors*. Some trait differences originate in heredity, some in environment; some are influenced by both. Whatever their origin, such factors as health and physique, experience, home relationships, the type of school and the kind of instruction profoundly influence the amount of variation that takes place.

IMPLICATIONS OF THE NATURE OF INDIVIDUAL DIFFERENCES

What practical value does this discussion of the nature of individual differences have for you as a teacher?

1. Recognizing and accepting the inevitability of variation will help you acquire a positive attitude toward special groups, particularly slow learners. You will not expect all children to achieve on a high level. Remember, too, that our complex industrial society could not function without individual differences.
2. Without variability, there would be no such thing as an average. Yet periodically there is an outcry over the fact that 50 per cent of school children have reading achievement scores below their grade norm (average), and that something should be done to improve their reading ability. No doubt, remedial efforts would raise the average of reading scores, and this is a laudable goal; but nothing in the world could raise the lower 50 per cent above the average. As long as children differ, there would be a new average, with about 50 per cent still below that point.
3. Can the extent of individual differences be reduced by adaptations in the school program? Where there have been wide differences in prior opportunity to learn and to practice, increasing the amount of practice can decrease variability. But we must also remember that pupils differ in the ability to learn. Therefore, increasing opportunities to learn and to practice also gives the more able children greater chances to improve, thus increasing variability. It appears that individual differences are here to stay!
4. Understanding individual differences will help you to evaluate remedial programs realistically. Very often the gains obtained from a program in remedial reading or remedial arithmetic fall far below the gains expected. Disappointment can be avoided if we recognize at the outset that many poor achievers are already performing near their level of ability. Given good instruction, remedial classes can register marked improvement provided classes are limited to those who are functioning far below capacity.

5. Recognizing that differences in rate of growth frequently are responsible for observed differences in schoolwork, you will not expect the impossible. You will appreciate the fact that many children in the first grade will not be physically and mentally ready for reading. A ninth year high school pupil growing too rapidly may be unable to concentrate on his schoolwork. His classmate who is far behind the others in bodily growth may be too immature to profit from secondary education.
6. Knowing that all aspects of personality are interrelated, you will be better able to teach special classes, whether the slow or the gifted. Remember that whatever promoted the social or personal development of these groups—as of all children—in the long run advances their intellectual development as well. In remedial classes you will find a sizable group that is emotionally blocked, one that will respond not to drills but to some form of guidance, casework, or psychotherapy.

School Adjustments to Individual Differences

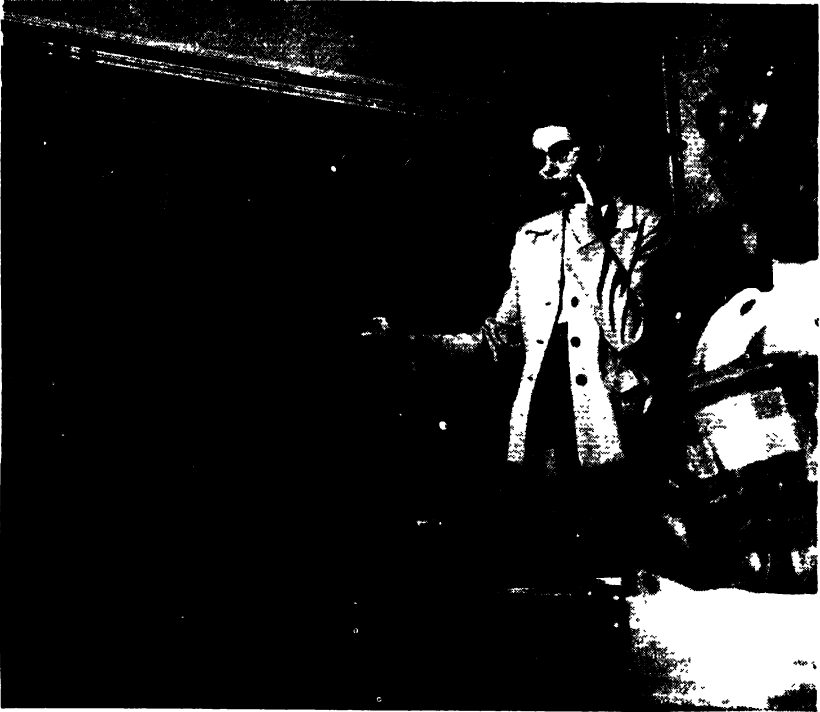
Pupils in our schools differ widely in abilities and interests, yet often we treat them as though they were all alike. We are dedicated to developing the potentialities of each individual, yet in many schools education is geared to whole groups rather than to individuals. These are essentially the paradoxes that confront us as we turn our attention to ways by which the school can satisfy the needs of individual learners. The adjustments to be considered in this section may be placed in three categories: grouping, curriculum, and methods of teaching.

GROUPING

Schools have long recognized the need for organizing pupils into groups for instructional purposes. Many plans have been tried. Often pupils have been grouped together on the basis of mental age and intelligence quotients. Experience has shown that these factors when considered alone are seldom satisfactory. In grouping pupils, the modern concept is that not only chronological age and mental maturity, but also physical maturity, social maturity, and emotional maturity should be considered. One psychologist, Willard Olson, calls the composite of these age and maturity factors *organismic age*. Even with the best schemes of classification of pupils, some plan of individualization of instruction is desirable and necessary.

Homogeneous grouping. The children who enter the first grade at the age of six are heterogeneous in ability. A first-grade child with a

mental age of five years may be sitting next to a first-grade child with a mental age of eight years. Often, they are given the same assignments and required or expected to do the same work. The grouping of children in classes or schools so that class groups are relatively homogeneous in mental ability has helped to solve this problem. Individualization of instruction has helped even more.



The teacher adapts the educational program to the individual needs of the children. (Courtesy of Speech Department, Southern Illinois University.)

In some schools where there are two or more classes in a grade, classes are organized to make each group as homogeneous as possible on some basis, such as intelligence or reading ability. Thus pupils of high ability are in one class, pupils of average ability in another class, and pupils of low ability in a third class. Some supervisors do not favor this plan. They prefer intraclass grouping to adjust the curriculum to

heterogeneous abilities. Thus pupils of high, average, and low abilities are taught in subgroups within the same class in school subjects where the differences are most evident.

The reasons given for opposition to homogeneous classes are: (1) They tend to isolate the bright and stigmatize the dull; (2) They foster antidemocratic attitudes; (3) They reduce opportunities for leadership among the bright; (4) They deprive average pupils of the stimulation provided by the bright.

Intraclass grouping is advantageous because it permits the teacher to give more time to small groups and to children needing individual attention. Accustoming children to work in committees while engaging in various projects and to regroup for different activities, such as art and mathematics, makes intraclass ability grouping acceptable to children. However, intensive remedial work as offered in the high schools is frequently best carried on in small homogeneous groups.

The Dalton and Winnetka plans are more ambitious efforts to cope with the problem of individualizing instruction. An important feature of these plans is that the traditional classrooms are transformed into subject-matter laboratories. Pupils are given assignment sheets or self-instructive exercises that have been carefully prepared. They work at their tasks by themselves and get help as they need it. Diagnostic and achievement tests keep teachers informed of the needs and progress of the pupils. Time scheduled for the units of work is flexible and is dependent on mastery. The teacher is freer to give help to individuals. There are group activities in addition to individual activities.

ADJUSTING THE CURRICULUM

Adjusting the content of what children learn to their varying abilities raises the question of how far the school ought to go in such adjustments. Is there not a common core of knowledge and basic skills that all children require to function effectively as future or eventual breadwinners and as citizens? If a democratic society must be devoted to the welfare of the individual, must there not be a wide variety of educational offerings to serve the multiplicity of interests, needs, and abilities?

The attempt to answer these questions has led to various solutions. One is to require mastery of minimum essentials, that is, common learning for all pupils, with additional materials as enrichment for the more capable. Children may be held back until minimum levels

are reached. Another is to abandon minimum attainments and to allow children to advance at their own rate.

In the modern school, the curriculum is not rigidly fixed. Children are allowed to share in the decision of what they are to learn. For example, in social studies the children may choose a particular country that other classes of the same grade are not studying. Or they may select a problem in science not in the syllabus.

When children proceed at a rate determined by their abilities, the curriculum becomes self-differentiating. This differentiation becomes apparent when the child faces the need to choose courses in the junior and senior high schools that are compatible with his abilities. The academic high school offers different courses for college-bound youth and those not going to college. Vocational high schools represent a further differentiation in the curriculum, although the academic courses in these schools try to satisfy civic as well as vocational needs.

ADJUSTMENTS FOR HIGH ABILITY

Adjustments to unusual proficiency are usually necessary for bright and gifted pupils. The adjustments most frequently made are to reduce to a minimum the amount of drill required in the case of able pupils who far exceed grade standards, and to enrich their programs by adding activities or subjects beyond the regular curriculum, by increasing the number and variety of applications of principles involved, and by adding advanced materials or problems in the ordinary subjects.

Sometimes the intellectually gifted are placed in "rapid advancement" classes in which they are expected to complete the regular school work in less than normal time. This plan has a disadvantage. The bright child may graduate at so early an age that he will not be as mature in his physical, emotional, and social development as average children. As a consequence he may face difficulties of adjustment. For this reason, classes for the mentally superior frequently provide for enrichment without acceleration. In periods in which there is a demand for personnel with higher technical and professional training there is usually a swing in favor of acceleration of these groups.

ADJUSTMENT TO LOW ABILITY

Many teachers make adjustments to low ability by several devices. One of these is simpler content, experiences, and drill in arithmetic skills, in reading, and in work-study skills in the social studies. A sec-

ond adjustment to low ability is for the teacher to make similar assignments and to set less extensive standards for mastery. Thus, for a low-ability pupil, the teacher might assign in arithmetic more work of a computational sort and rather simple problems in arithmetic reasoning. For high-ability pupils, more complicated assignments with more complex problems in arithmetic reasoning would then be assigned. For the low-ability pupil, the standard of achievement would be less extensive than for the brighter pupil. For some pupils of especially low ability, it is necessary to develop markedly different courses of study or curricula. In these differentiated curricula, special aptitudes and abilities of the pupils are sought, and attempts are made to provide experiences for the pupils that are as concrete and specific as possible.

ADJUSTMENTS FOR SPECIAL DISABILITY

Contrasted with adjustments to low ability are adjustments made for special disabilities in ordinary schoolwork. The special disabilities may arise because the individual has failed to master a particular skill or concept at a particular time and thus finds himself handicapped in more advanced work. Teachers generally have found that adjustments for these disabilities may be made by providing special attention to the pupil. In reading, for example, the pupil may have some difficulties in eye movements, vocabulary, or even in temperament that hold up his growth. Such cases call for observation in order that the teacher may locate the cause. In the same class of adjustments may be the correction of deficiencies in school subjects caused by skipping or absence. The usual adjustment is to provide the individual with make-up work that will supply the loss or to give the extra drill in the minimum skills and abilities necessary for further work. Pupils who do not respond to additional help frequently profit from placement in special remedial classes.

ADJUSTMENTS FOR HEALTH

Adjustments to health and physical defects may be made by giving special attention and supervision to pupils where it may be desirable to have frequent medical inspection, and to maintain close coordination with parents and clinical agencies in the community. For certain health and physical defects, classroom adjustments may be made, such as seating in the front of the classroom for the hard of hearing and

for those whose eyesight is poor. Special lighting may be provided for the partially sighted pupils. Rest periods for the undernourished and part-time schedules for pupils whose vitality is low are other adjustments that might be made.

METHODS OF TEACHING

Methods of teaching vary with the ability of pupils. The essential difference in methods arises from greater capacity by the mentally superior to deal with concepts and to engage in abstract thinking. Bright pupils can acquire much information from books. The slow require more direct experiences. Because they often come from homes less culturally privileged, they must make up a deficit of experience both inside and outside the school. Taking trips and exploring community resources are more important for this group. Concrete materials rather than abstract are required.

Using a multi-sense approach is another way of adapting education to the needs of the slow learner. While appeal to the various senses strengthens learning for all children, it is indispensable for the slow. For these children the usual classroom recitation methods do not suffice. Audio-visual aids of various kinds, direct manipulation, and construction projects are used in teaching children of lower ability.

A teacher of slow children usually finds it wise to choose subject matter that is of immediate interest and of practical value. The teacher also needs to give more attention to motivate and prepare these children for learning. Brighter children find their environment rich in material that stimulates imagination and thought and hence has strong intrinsic motivation.

The bright need to be given more opportunities, particularly in classes of mixed ability, to cultivate their interests by doing intensive individual research in problems and in fields that appeal to them. Through interest in hobbies, they sometimes acquire an amazing amount of knowledge in such fields as stamp collecting, communications, crystallography, undersea life, and geology. They can be used as committee chairmen to assume greater responsibility for planning and coordinating group projects and reports. But their talents should not be exploited entirely for group purposes. Ample opportunity should be afforded for free creative expression in the various arts.

ADJUSTMENTS BY SPECIAL AGENCIES

In larger communities, child guidance clinics have been formed

The personnel of the clinic normally includes a full-time or part-time psychiatrist, a physician who is usually a specialist in mental and nervous maladjustments of children, an educational psychologist, and psychiatric social workers or visiting teachers. Children are referred to the clinic by teachers for examination, diagnosis, and prognosis. The clinic personnel recommends treatments and in many cases assists in the actual treatment of the individual.

In other communities, usually smaller ones, a school counselor is employed. The school counselor, a qualified psychologist with educational training, acts as diagnostician for maladjusted children who show symptoms of scholastic deficiencies, behavior abnormalities, and emotional disturbances. In some instances, the work of the counselor is limited to diagnosis and prescription, the corrective treatment being applied by the classroom teachers. In other instances, the counselor undertakes the remedial instruction of some of the more difficult cases.

Some communities, although they are rare, employ only a visiting teacher or psychiatric social worker. The visiting teacher's services are devoted principally to the treatment of children who present problems of scholarship or conduct of a baffling, erratic, troublesome nature, or who exhibit other personal and social maladjustments which the regular staff of the school finds itself unable to understand or to deal with unaided.

Summary

That school children differ widely in many ways, even when grouped with their mental equals, is apparent to any teacher with experience. They differ with respect to types of intelligence and intellectual functioning, even when I.Q.'s are similar. They show a wide range of achievement in various school subjects. The individual's own achievement pattern is frequently uneven. Attitudes toward authority, toward schooling, and toward self, characteristic modes of behavior in problem-solving situations with emotional implications, reactions to success and failure, socioeconomic background—these and other factors further complicate and widen individual differences in learning.

A knowledge of the nature of individual differences is essential if the teacher is to improve the education that all children receive, regardless of their ability.

The teacher must be familiar with many approaches to adjusting

the learning situation to the individual needs of the pupil. The teacher must also acquire skills either to encourage and increase or to decrease the existing individual differences. Each approach or skill occupies an important place in a modern school system.

Ability grouping for accelerating the progress or enriching the education of the bright is a measure commonly employed. It is found in special education for exceptional children of various types—the mentally retarded, the physically handicapped, and those requiring remedial treatment for subject disabilities. Intraclass grouping has found increasing favor in larger school systems in recent years.

Special comprehensive programs for individualizing instruction, notably the Dalton and Winnetka plans, have been evolved to make possible maximum progress at the individual's own rate.

Classroom activities provide a fertile field for diversified levels of achievement for individual pupils. In a unit of study planned for the class as a whole, each pupil may proceed at his own rate. He may find expression for his interests and abilities in individual projects and in free creative work. The curriculum need not be exactly the same for every member of the class.

Many problems of educational, social, and personal adjustment can be diagnosed and treated by the alert, well-trained teacher. But the more stubborn and serious problems require the specialized services of guidance personnel, remedial teachers, caseworkers, and psychologists, and the cooperation of various social agencies.

No child in the public schools can realize his educational growth and development without carefully planned and administered adjustments to wide individual differences that exist among pupils.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • In what subjects will students of high mental ability have greater chances of success than students with low mental ability?
- 2 • Explain the reasons for a special curriculum for mentally retarded pupils.
- 3 • What courses would you recommend for a student with high I.Q. who wishes to enter an engineering college?
- 4 • Formulate a plan that you consider would provide an adequate system of personality guidance for a high-school student.

- 5 • Indicate reasons for favoring or not favoring classification of pupils on the basis of I.Q.
- 6 • Would you recommend that, if a pupil is very good in several subjects, he should spend all of his extra time on subjects in which he is poor?
- 7 • Are individual differences in pupils generally increased or decreased by the training which they receive in schools: (a) in perceptual-motor skills? (b) in complex intellectual tasks?
- 8 • Can an unusually poor environment lower the I.Q. of a child of good mentality, or can an unusually rich environment make a normal child out of a mental defective?
- 9 • Are there essential physical, emotional, and mental differences among bright, average, and dull children?
- 10 • If an individual is superior in one trait or in practicing a given ability, is he likely to be superior in others?
- 11 • Are differences within an individual among his various abilities significantly large?
- 12 • What range of differences in academic achievement would you estimate for pupils in a fifth-grade class?
- 13 • What are the values of such adjustment as one might find in the Dalton, Winnetka, or Project plan?
- 14 • Should a boy who is socially 14 years old but who has a mental age of about 10 years be retarded in the fifth grade rather than promoted to junior high school?
- 15 • Should a child who is physically 10 years old but who has a mental age of 14 years skip several grades in school?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Abrahamson, Stephen, "Each Teacher Chose a Problem Child," *Clearing House*, 26 (1952), pp. 557-59.
- American Educational Research Association, "The Educational Program: Adolescence," *Review of Educational Research*, Vol. 24, No. 1, (1954).
- Asch, S. E., *Social Psychology*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1952.
- Department of Supervision and Curriculum Development of the National Education Association, *Group Planning in Education*, 1945 Yearbook, Part III. Washington, D.C., The Association, 1945.
- Dollard, J., L. W. Doob, N. E. Miller, O. H. Mowrer, and R. R. Sears, *Frustration and Aggression*. New Haven, Conn.: Yale University Press, 1939.
- Eells, K., A. Davis, R. J. Havighurst, V. E. Herrick, and R. W. Tylor, *Intelligence and Cultural Differences*. Chicago: University of Chicago Press, 1951.

- Featherstone, W. B., *Teaching The Slow Learner*. New York: Teachers College, Columbia University, 1941.
- Greene, E. B., *Measurements of Human Behavior*. New York: Odyssey Press, 1952.
- Hamrin, Shirley A., *Chats with Teachers about Counseling*. Bloomington, Ill.: McKnight and McKnight Co., 1950.
- Kuhlen, R. G., and G. G. Thompson, *Psychological Studies of Human Development*. New York: Appleton-Century-Crofts, 1952.
- Murphy, G., *Personality*. New York: Harper & Bros., 1947.
- Sarason, S. B., and G. Mandler, "Some Correlates of Test Anxiety," *Journal of Abnormal Social Psychology*, 47 (1952), pp. 810-17.
- Terman, L. M., and M. A. Merrill, *Measuring Intelligence*. Boston: Houghton Mifflin Company, 1937.
- Tiedeman, D. V., and J. J. Steinberg, "Information Appropriate for Curriculum Guidance," *Harvard Educational Review*, 22 (1952), pp. 257-74.
- Tyler, Leona E., *The Psychology of Human Differences*, Second Ed. New York: Appleton-Century-Crofts, 1956.
- Wrightstone, J. W., *Class Organization for Instruction*. Washington, D.C.: Department of Classroom Teachers, American Educational Research Association of the National Education Association, 1957, 33 pages.

PART



LEARNING

7

GENERAL ASPECTS OF LEARNING

The Process of Learning

THE NATURE AND DEFINITION OF LEARNING

The interest of the educational psychologist in learning centers around the conditions under which learning takes place most easily and most rapidly. The attention at present concentrated on remedial education indicates that we are still far from having complete knowledge of the optimum conditions of learning under many circumstances; otherwise, it would not be necessary to devote so much energy to elaborate programs of redoing what has been done before.

Countless definitions of learning have been given. The tendency of modern psychologists is to try to define learning in objective, experimental terms. The following definition epitomizes points of emphasis in many of these definitions: *Learning is a process of progressive behavior adaptation.*

THE DYNAMICS OF LEARNING¹

Common sense makes a distinction between purposive and non-purposive behavior—between the aimless and diffuse expenditure of energy and the calculated carrying out of a planned and projected program of action. But it is difficult to maintain this distinction in the light of exact logic or to substantiate it by detailed experimentation on behavior. For example, the cat which is confined within the puzzle box, and which, being hungry, can smell the food outside that it will get if it releases itself, has, as we say, a motive for getting out of the box. But much of the behavior that ensues, in the light of this

¹ See also Chapter 8.

supposedly clear want, is trial and error, and, if viewed without knowledge of the entire situation, is apparently purposeless.

Goal-seeking, or some ultimate purpose in behavior, is one of the outstanding dynamic factors in learning. Kilpatrick, for example, regards purposeful activity as the essential basis of intellectual life and as the foundation of intelligent learning. (See the articles in the *Journal of the National Education Association*, Volume 24, Number 9, December, 1935.) As has just been said, however, it is difficult to divide all behavior into purposive and nonpurposive by any set of criteria yet devised.

Countless puzzling phenomena in the animal world further complicate the formation of a decisive judgment on the exact nature of purpose. Nobody really knows whether the insect which lays its eggs in only one type of environment and which seeks that environment with considerable accuracy has even a vague notion of what we call "goal-seeking" in a human being. Thus, if we attempt to differentiate purpose in human beings and other animals, we must do so on some basis other than the merely utilitarian nature of behavior. Even in the case of human beings, the demonstration of purpose depends upon the introspective report of the behaving organism rather than upon the classification of the behavior itself.

One way of looking at purpose as a dynamic factor of learning is to regard it as the incipient or partially completed portion of an imminent behavior cycle. Viewed in this fashion, the difference between the purposive portion of an act and the remainder of the same act is largely chronological.

Mind is another dynamic factor. There are also many ways of considering the mind. Some regard it as a reservoir of convertible energy in a conative (action) state of being. A simpler way of saying the same thing would be to call it a powerful force trying to move in some direction of lowered resistance or emergent attraction.

A second definition of mind can be given in terms of metaphysics. Such a definition would imply that the mind is a substance qualitatively different from the body in its basic and elementary construction.

A third, and somewhat more objective, method of describing mind as a dynamic factor of learning is to treat it as a form of behavior, particularly behavior that is progressively effective, altering, and alterable. Guthrie² so defines mind in his *Psychology of Learning*.

² Guthrie, E. R., *The Psychology of Learning* (New York: Harper & Bros., 1935), p. 4.

There does appear to be a powerful energizing force behind behavior. The log lying on the hillside, rotting under the influence of the sun and rain, is changing its appearance, structure, and position, but we do not say that it is learning. Neither do we say that the log has a mind or that the changes being produced in it are the result of some mental operation. Rather, we reserve the description of behavior governed by mental processes for that which is an active adjustment to changing external circumstances. Even so, some mechanists are not willing to recognize any difference between this type of mental behavior and the physical alterations taking place in the log lying on the hillside.

Drive, or emotional reinforcement, is a third and final dynamic factor in learning. As has been pointed out in another discussion, there is evidence for believing that human beings possess strong inclinations toward certain types of behavior. These tendencies, as described by Thorndike, have been listed and described. Such basic wants and desires provide the primary motivation for the beginning of complicated behavior cycles. As these cycles develop, they are progressively reinforced by individualized habits grounded in glandular and physiological reaction.

The emotional reinforcement of behavior, viewed purely from the external side, is rather easily understood. But it is given far too little attention by both parents and teachers. Emotional responses become associated with a variety of situations in exactly the same way that other responses become so associated. Conditioned emotional responses are common, and constitute the only basis upon which we can hope to build a program of motivating school subjects.

THE MECHANISM AND PROCESS OF LEARNING

Before discussing the process of learning let us consider certain terms and hypotheses. Under the behaviorist or associationist schools of thought, a stimulus is an agency or force, external to a receptor, which is capable of exciting a response in a suitable receptor. A reaction is any response or change in an organism resulting from stimulation. A basic hypothesis holds that there is no reaction without stimulation. In other words, members of this school of thought believe that spontaneous conduct is not possible and that behavior results only from stimulation, whether the exciting stimulus is internal or external. The statement of the reaction hypothesis does not imply

that there is no stimulation without reaction; in other words, forces may be acting which would normally produce a reaction but which may be less forceful than required to stimulate a reaction at a particular time or which may be blocked out by some form of interference. The argument involved here is akin to the old philosophic debate about the tree falling in the forest; for our purposes, we are assuming, with the physicist, that the disturbance set up by the tree takes the form of sound waves whether a hearer is present or not, but that a person cannot "hear" a sound without being stimulated by a force like that supplied by the sound wave. The important thing for the student to remember is that *without stimulation there is no reaction*, that all learning begins with an excitatory situation.

What happens when the organism is stimulated? Theoretically, it would be possible for stimulation to produce a generalized response of uncoordinated and undifferentiated nature and with few regulatory characteristics. As a matter of fact, this is what does happen in some diseased conditions of the nervous system and certain abnormal mental states. Ordinarily, however, the reaction which the organism gives to adequate stimulation is relatively coordinated, integrated, and differentiated.

The outstanding characteristic of the systematic nature of response is the feature of *association*. This is the process by which events contiguous in time or space tend to recall each other. The phenomenon has long been known to analytical observers of human conduct. "Once bitten, twice shy," "The burnt child dreads the fire," and numerous similar maxims illustrate man's recognition of this basic process in learning.

Although association has been recognized as a process for hundreds of years, the exact mechanism by which it takes place has not been and still is not surely known. Some early psycho-philosophers believed that the association was between ideas, and that the mechanism was some undefined metaphysical affinity. Even today, with our substantial knowledge of neurology and physiology, the exact working of this interesting occurrence is partially conjectural.

It must not be supposed that the associative is the only kind of learning, but it appears to be the predominating one in the case of certain school subjects—a fact that accounts for the emphasis given to this type of learning in the present chapter.

Association probably takes place by a process known as condition-

ing. E. R. Guthrie³ has described conditioning as follows: "A combination of stimuli which has accompanied a movement will on its recurrence tend to be followed by that movement."

The phenomenon of conditioning is a fundamental mechanism of adjustment and one of the basic principles upon which learning depends. As has been said, just how or why it happens is something that is still clouded in mystery. In the past it has been believed that reacting mechanisms responding to stimuli (so-called "unconditioned" stimuli) which naturally excite them have a tendency to draw into their neural channel by some sort of attraction "casual" incoming impulses. This theory, known as the "theory of drainage," held that such an attraction resulted in lowered resistance along the pathway followed, thus making it easier for the same path to be followed on future excitation of approximately the same combination of sense organs. Plausible as this theory may sound to those who are not highly trained in the neural phases of learning, it has been severely questioned by both experimental and theoretical psychologists.

Thorndike, although admitting the phenomenon of conditioning, feels that it is relatively specialized and not to be regarded as a formula for the explanation of all learning. The following quotation states this point of view.

It has been assumed by many in a rather vague way that there is some connection between the discussion of associative shifting as given by Thorndike in his own classic treatise and the conditioned reflex, but the exact nature and extent of this relationship has never been made entirely clear, particularly with an experimental basis. It happens that Thorndike has interested himself in the problem and put forth a discussion which attempts to settle the issue. In general, his conclusions may be summarized as follows:

1. The conditioned reflex, while adequately demonstrated experimentally, is a special, if not an unnatural form of learning in which the variables are controlled to a far greater extent than in everyday life, and, consequently, the learning is modified accordingly, being of a special variety.
2. The phenomenon of the conditioned reflex is not the general pattern for learning but exhibits certain peculiar features of its own which are not generally characteristic of learning. For example, in associative shifting of the usual sort reward of a satisfying sort plays a considerable part. This is not true in the formation of the conditioned reflex.
3. In associative shift the change is likely to take place somewhat gradually. In fact, it must be gradual in some cases. This is not true in

³ Guthrie, E. R., *op. cit.*, p. 26.

the case of the conditioned reflex where the change is of the all-or-none variety and occurs comparatively rapidly.

4. Ordinary associative connections diminish in strength (forgetting) with the passage of time. The reverse is the case of the conditioned reflex, since the phenomenon of temporary extinction passes away with time and conditioning again begins to function.
5. The chronological position of the conditioned stimulus is of more importance in the case of the conditioned reflex than in the case of the ordinary associative shift.⁴

A number of principles of conditioning have been so well established, however, as to make it worth while to call them to the student's attention.⁵ No better statement of these principles in summary form has been given than that by Guthrie:

1. The simple conditioned reflex is most readily established when the substitute stimulus is given shortly before the original stimulus (the stimulus used in the laboratory to elicit the reflex to begin with).
2. Simultaneous and backward conditioning are possible, but less effective than forward conditioning.
3. A substitute stimulus which has, to use Pavlov's language, been conditioned to a response loses this effect when it is repeatedly given without reinforcement from the original stimulus. This Pavlov calls *temporary extinction*.
4. This loss of effect can proceed farther than the zero point, and the "extinguished" stimulus will have an inhibiting effect on the response.
5. Temporary extinction may disappear after a period of rest, or after disturbance from a new irrelevant stimulus.
6. When extinction is carried out repeatedly, recovery is progressively diminished, until it fails to take place.
7. Having conditioned S_1 to a response, S_2 may be conditioned by being presented with S_1 , S_1 by being presented with S_2 , and so on. In my opinion this is not an important generalization, since the essential condition of associative learning is the association of the new stimulus *with the response, not with the original stimulus*.

⁴ Powers, F. F., and W. L. Uhl, *Psychological Principles of Education* (New York: D. Appleton-Century Company, 1933), pp. 390-91.

⁵ The higher thought processes (for example, Spearman's "eduction of relations" and "eduction of correlates") go so far beyond simple conditioning that it is difficult or impossible to explain the higher thought processes on the basis of conditioning. See C. Spearman's *The Nature of Intelligence and the Principles of Cognition* (New York: The Macmillan Co., 1923) and *The Creative Mind* (New York: D. Appleton-Century Company, 1931). In spite of the cogent objections of Thorndike to regarding the conditioned response as a basic explanation of all learning and the splendid work of Spearman in elucidating the higher mental processes, the work on the conditioned response offers some of the most exact experimental work ever done in the field of the mechanics of human behavior.

8. A response involving widespread bodily action is more readily conditioned than a response confined to a few local effectors.
9. There seems to be evidence that among children conditioned responses are formed more readily as age advances, and more readily in the more intelligent.
10. One attempt to form a conditioned response during sleep has been a failure. Conditioning failed in another experiment by Harlow and Stagner (1933) when skeletal muscles were paralyzed by curare, though smooth muscle reflexes were conditioned at the same time. An active response, in other words, is the essential of conditioning, not merely the association of the stimuli.
11. The certainty of conditioning seems to depend on the number of pairings of substitute stimulus and response.
12. Negative or inhibitory conditioning is possible, achieved by presenting a stimulus and not insuring the response, or by distracting the response, or by inhibiting the response, or by presenting the substitute stimulus after the original stimulus. The signal has a positive inhibiting effect on the response. In many cases such inhibition is clearly accompanied by conflicting responses.
13. Retention of conditioned responses over a period of years has been reported.
14. A conditioned inhibiting stimulus has an after-effect which may last as long as fifteen minutes. Such after-effects are in some cases additive.
15. When a substitute stimulus has been conditioned, other stimuli to the same class of sense organs may be found to elicit the response. This is called *generalization*.
16. If the substitute stimulus is presented some time before the original stimulus, this delay interval finally characterizes the conditioned response.
17. Similar stimuli (as two tones of about the same frequency) may be discriminated by following one but not the other with the response.
18. A point of resemblance can be reached at which this discrimination will fail and previous conditioning will be lost and a general disturbance of behavior appear.
19. The same disturbances in behavior can be produced by delaying the original stimulus in practice.
20. A stimulus acting separately and the same stimulus acting as an element of a pattern may have radically different effects; the combination may act as a conditioner and the element as an inhibitor; or the element may act as a conditioner and the combination as indifferent. When we refer to a "stimulus" we must ordinarily mean a combination of stimuli in which the pattern is essential. Humphrey . . . conditioned a response to a tone and found that when the tone was made part of a melodic phrase the conditioning effect was absent. Josiah Royce illustrated this point many years ago by pointing out that a man's response if we step on his foot and then apol-

ogize will be quite different from the response we elicit if we apologize and then step on his foot."

Outcomes of Learning

We have considered learning as a process and some of the mechanisms by which it takes place. We now come to a consideration of the learning products which may result from learning activity. These products are (1) skills and habits, (2) social competence, and (3) abstract and creative thinking. We shall consider each separately. Although we have definite rules for the achievement of each of these learning products, accomplishments are so varied that some psychologists have held that there are three general kinds of intelligence—the mechanical, the social, and the abstract.

SKILLS AND HABITS

All of us have noted at one time or another the difference between the poised and well-coordinated adult and the awkwardly clumsy adolescent. The difference lies primarily in the skill with which adults automatically handle themselves; this skill, in turn, results from faithful adherence to training habits. But there are clumsy adults as well as skillful ones. It is possible to ingrain habits of awkwardness and slovenly posture and to make more difficult the task of acquiring coordination and balance.

The development of skill calls for a correct initial performance. The difficulty with most amateur typists is that they have tried to develop a technique of their own instead of taking some lessons at the beginning. Correct initial technique and practice are the simple formula by which skilled activities reach a high level. This view is borne out not only by experimentation but by observation of outstanding athletic performance.

With respect to artistic skill, creative skill, and talent, individual differences in learning and accomplishment may be explained by the statement that probably people differ in the basic ingredients which go to produce skilled acts. Artistic accomplishment is really skill, plus imagination, plus practice.

SOCIAL COMPETENCE

Social competence is probably the most practical single learning product. The egocentric nature of childhood makes it necessary that

^a Guthrie, E. R., *op. cit.*, pp. 33-36.

the child learn many, if not the greater part, of the things that make up what we call "social adjustment." As in the case of individual differences in mechanical aptitude, people may differ somewhat in general sociability. But the most glaring ineptitudes in social adjustment appear to be caused not by any natural lack of sociability, but rather by failure to grasp and practice the behavior necessary to secure this adjustment.

The acquisition of social competence is dependent upon the advanced development of the psychological factors of observation and attention and the direction of these functions to the minutiae of human conduct. Biologists would be loath to admit that human emotions are much less violent than they were thousands of years ago. There has been a vast change, however, in the responses of people to emotionalized behavior on the part of others. Yet all emphatic and widespread reactions carry with them concomitants that are obvious to the practiced eye. No small part of social adjustment consists in the ability to recognize these cues and to react to them skillfully.

ABSTRACT THINKING

Psychologists have always met with difficulty in their efforts to define the essential nature of abstract thinking, which presents many problems to one who attempts to subject it to experimentation. These difficulties are reflected in the efforts of teachers to develop in pupils the ability to do abstract and creative thinking. The philosophical concept of universals is involved—*chairness* as against an individual chair—and along with it the doctrine of psychological emergence. The experience of a learner with a wide variety of objects of roughly similar nature from the perceptual standpoint normally leads through a process of psychological synthesis, the elements of which are only vaguely understood, to a generalized "picture" exhibiting emergent characteristics of some or all of the original component experiences. These synthesized concepts are customarily verbalized. Abstract thinking, in turn, proceeds by permutations and combinations of the words. Furthermore, the words may be learned by themselves with their meaning dependent upon definition and other words, rather than upon direct sensory experience and a process of induction. This possibility has led to problems of verbalism and superficial learning that have deeply concerned some who have given special attention to it.⁷

⁷ Korzybski, A., *Science and Sanity* (Lancaster, Pa.: Science Press Printing

Since abstract thinking takes place in large part through the mechanism of words, the importance of a large vocabulary, resting upon an adequate sensory experience, becomes obvious. Likewise, the value of correct reading habits, particularly higher-level reading habits, takes on augmented significance.

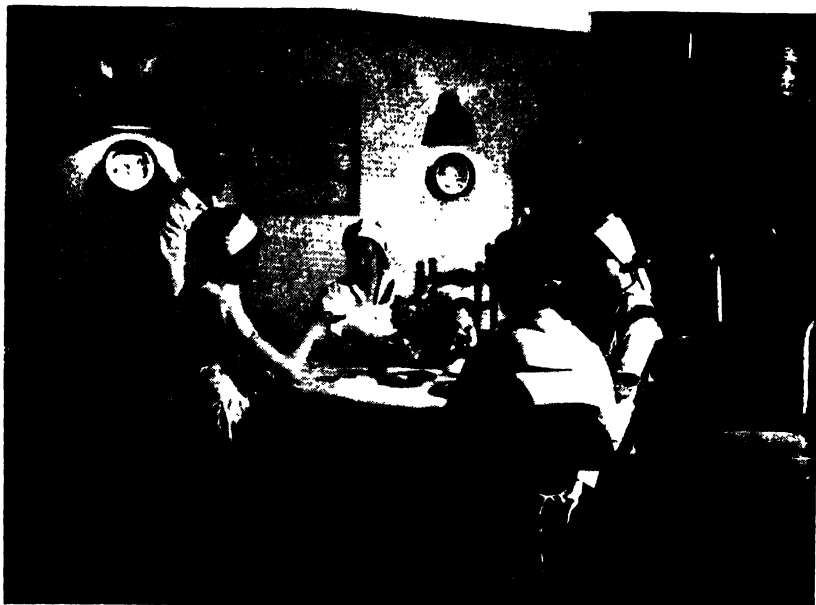
Principles of Learning

That the process of learning in both animals and human beings possesses features of regularity and system will be denied by no one who has examined the problem. Tremendous progress has been made in recent decades, furthermore, in clarifying the nature of the process and the resulting products. But when one comes to describe the learning process by a series of laws and principles, the problem of verbalization is considerable, since the process itself is extremely complicated and the scientific recording of all the variables and conditions of a learning experiment well-nigh impossible. When we stop to consider that the alteration of what may appear to be a minor factor in the learning condition may completely change the final result, the importance of this obstacle becomes manifest. In addition to the difficulty of objectively recording all the aspects of a situation is the problem of terminology. Even a complex and highly inflected language lacks words to describe the multitudinous phases of human reaction. A further difficulty in formulating a statement of principles of behavior is the absence of a common denominator among experimenters. Since research scientists pay attention to different phases of the same situation, they naturally state their results differently. Nor does it help to say that we can solve the problem by stating everything in strictly objective terms. This method of solution is quite satisfying theoretically, but when put into actual practice, it often results in an absurd quantity of details. With the foregoing qualifications in mind, it is our purpose to state certain principles of learning that appear to be fairly well established. The discussion will follow in general the point of view of Thorndike.

All animals appear to learn most effectively when they are "in the mood." This is a principle of learning borne out both by common sense and by experimentation. It is sometimes known as the *law of readiness*. Readiness does not connote mere desire to learn; there is

much more to psychological readiness. Readiness involves physiological maturity of certain of the structures to be used. Burton writes in his description of readiness that:

It is the pedagogical counterpart, so to speak, of maturation but includes social and intellectual maturity as well. That is, we say that at a certain time a child is ready to read, ready for formal arithmetic, ready for the development of time sense in history, ready to participate in group



Learning by living. (Board of Education City of New York.)

activity, and so forth. His physical and neurological maturity and his experimental background are such that he could read, could do abstract arithmetic, could get along with other children cooperatively—if the situation arose which demanded these things.⁸

The walking of the young baby, in spite of his desires and sometimes frantic efforts, awaits the development of the mechanism that makes the learning of walking structurally possible. Regardless of the psychological desire to learn or the maturity to do so, such factors as fatigue and physiological unreadiness must not be overlooked.

⁸ Burton, W. H., *The Guidance of Learning Activities* (New York: Appleton-Century-Crofts, 1944), pp. 158-59. With permission of Appleton-Century-Crofts, Inc.

A second learning principle is illustrated by the common saying, "Practice makes perfect." This principle has been called the law of exercise. The law of exercise does not guarantee that mere countless repetitions of any given reaction will serve to fix it, although the erroneous belief that it does has led in some schools to the institution of drill methods diametrically opposed to the principles of efficient learning. Except in the case of motor learning, mere practice by itself is not a potent factor in learning. Even in the learning of skills, effective learning requires much more than mere practice. At this point it is well to call attention to the fact that the several optimum conditions of learning implied by the principles being stated usually must be present simultaneously in order to insure the best learning. For example, repetition or exercise of a reaction does not result in optimum learning when the organism is in a state of unreadiness. In other words, the principles of learning that are being stated now are really descriptions of the various phases of effective learning and are in no sense alternative principles by which learning may take place.



These children learn to sing by singing. (Courtesy of Chicago Public Schools.)

It is common knowledge among both teachers and students that subjects which a pupil dislikes thoroughly, because of either the content itself or of some situation connected with or following the learning, are likely to be poorly mastered. The same truth has been expressed as the *law of effect*: Learning responses that have been accompanied or followed by satisfying states or conditions, which the organism strives to maintain or attain, tend to be repeated and mastered more easily (selected and learned). The learning is "stamped in," however, because of the functional consequences of the activity rather than because of the effect of the feeling and emotional concomitants of the learning. As Gates has pointed out:

Unfortunately, the law of effect has often been interpreted as referring to the influence of *affective concomitants* (feeling accompaniments such as pleasure and pain) of a response rather than its *functional consequences*. Actually, human beings can tolerate considerable unpleasantness or annoyance as immediate after-effects of responses if they consider that these reactions are instrumental to the attainment of a highly valued goal. Recent research has demonstrated that learning sometimes can actually be facilitated by punishing correct reactions. Learning experiments have frequently employed electric shocks as punishments which supposedly induced annoying after-effects. It has been discovered that in certain learning situations shocking the subjects when they made right responses was as efficacious as shocking them for the wrong ones.⁹ The reason these reactions were learned in spite of their apparently annoying after-effects is that the subjects discovered that they were the right paths to the objective.¹⁰ If one is to agree that "a process of learning is modified definitely by the consequences incurred," one must interpret consequences to refer fundamentally to the functional relation between the responses and the motivating conditions or between means and end.¹¹

The converse statement of this principle is not equally true. Annoyers are much less effective than satisfiers. Annoyers do not weaken learning "connections" as much as satisfiers strengthen them. Learnings that are accompanied or followed by annoying consequences (states or conditions that the learner attempts to avoid or supersede) are not necessarily weakened. In fact, many studies have shown that

⁹ Muenzinger, K. F., "Motivation in Learning, II. The Function of Electric Shock for Right and Wrong Responses in Human Subjects," *Journal of Experimental Psychology*, Vol. XVII (1934), pp. 439-48.

¹⁰ Dashiell, J. F., "A Symposium on the Law of Effect," *Psychological Review*, Vol. XLV (1938), pp. 191-218.

¹¹ Gates, A. I., et al., *Educational Psychology*, Third Ed. (New York: The Macmillan Co., 1948), pp. 318-19. Reprinted by permission.

learning responses may be established when the after-effects are unpleasant. Thus, the principle of effect requires many additions and amendments to the bald statement that pleasant effects reinforce and unpleasant effects detract from learning.

In addition to the three principles just stated, certain qualifying circumstances enter into many learning situations. Some investigators believe that learning experiences which are first or last have a tendency to gain a certain ascendancy. This belief has been stated in the so-called laws of *primacy* and *recency*. Another qualifying circumstance is the emotional tone of the learning itself. There is some evidence that strongly emotionalized situations contain more fixative power than weakly emotionalized situations, the *law of intensity*.

It is necessary that teachers bear in mind the principles and qualifying circumstances of learning situations. When we come to translate the above principles into classroom practice, we find that it is easy to do so as far as statement is concerned but sometimes very difficult in practice. Encompassing all of the three major points in one thought, we find that optimum learning takes place when the learner is in a state of psychological and physiological readiness, when he repeats at intervals the learning series which is to be mastered, and when that series is accompanied by an emotionally satisfying experience. The major task of the school and the teacher is to arrange the learning situation so that these conditions prevail.

The Role of Insight in Learning

There are several puzzling major problems of learning about which leading authorities are still disagreed—and violently so. One of these controversies concerns the extent to which insight plays a part in learning.

Roughly classified, there are two schools of thought on the major process of learning itself. One school explains learning by what its critics call “machine theory.” According to this mechanistic theory of learning, the entire process can be explained as a series of complicated connections among the receiving, transmitting, and reacting structures in the body. This point of view discounts completely spontaneous ideation and gives very little attention to learning syntheses and emergents.

The second school, though admitting certain of the experimental

facts of the first, adds to its explanatory mechanism the factor of insight on the part of the learner. "Insight" is not easy to define. It connotes a grasp on the part of the learner of an entire situation, particularly of the interrelationship of parts of the situation to each other. It minimizes the role of habit and the mechanical phases in learning which stress the units in the nervous system and similar explanatory principles. It holds that the learner, and only the learner, is aware more or less clearly of the *why* of his action. A quotation from Köhler will give, in the words of one of the outstanding exponents of insight, the point of view.

If habit and reproduction are not to be regarded as the main motors of so-called mental life, what shall we say are the real ones? To this question there is one answer, not well formulated but implicitly accepted, which we may call the layman's belief. It is the layman's belief that, in general, he himself directly feels why at one time he has one attitude, and later on another; also that, for the most part, he knows and understands directly why he is inclined to do one thing in a certain particular situation and why a definitely different thing under subsequent different conditions. In his view, then, he is experiencing directly and truly much of that dynamical context, the development of which constitutes mental life. Opposed to this belief and altogether foreign to it, we have the view of most learned psychologists at the present time. From their viewpoint, one is inclined to do one thing now and then another, because, in the first instance, certain nerve paths are most available and, in the second instance, certain other paths are most open. Fortunately those people in whom the most permeable nerve paths in practice are usually the right and appropriate ones! From the psychologist's point of view it would be a pure mystery if a person's behavior should ever be determined, as the layman believes, directly by the concrete properties of the actual situation. The layman's belief is in full agreement with everyday experience; the learned view harmonizes with what we suppose to be the viewpoint of natural science. I shall confess at once that I choose the layman's belief whole-heartedly. In the treatment of sensory process *gestalt* psychology prefers the data of naïve description to the findings of prejudiced introspection. Following this line, the theory of the sensory field has begun to have a much more intimate contact with the natural sciences than it ever had when it imitated a self-made ideal of these disciplines. Similarly if, with regard to the total field, we adopt the view of common experience, what is called the viewpoint of natural science will soon be given up, in place of which we shall substitute the theory of dynamics. At the start of our present discussion, therefore, the obvious, almost the vulgar, will have to be said. It is not our fault that, to a deplorable degree, the obvious has disappeared from learned psychology, so that we have to rediscover it. Later in the course of this analysis the obvious aspects of common experience will assume the function of expressing certain fundamental properties of physical

dynamics in the nervous system. This is exactly the contrary of the prevailing opinion.¹²

It is quite apparent that adherence to either the extreme mechanistic explanation of learning, or the extreme insight explanation, would actually make some difference in school organization and teaching practice. Obviously the machine theory explanation heavily stresses external factors in the form of the stimuli in the situation, whereas the insight explanation emphasizes inner factors in the form of complicated states of awareness in the learner by which he tells why he is doing what he does, as Köhler puts it. Naturally, the teacher who wishes to be psychologically sound in setting up classroom situations is concerned about the extent to which the learner is able to make an intuitional contribution to the process.

ATTENTION AND MINIMAL CUES

One way to reconcile the apparently diametrically opposed theories of trial and error and insight is to emphasize two principles of learning which both schools of thought grant, and which may possibly be more important than either school has ordinarily considered. These two phenomena are *attention* and *minimal cues*. The phenomenon of attention may well be closely related to that of insight. The inattentive and indifferent animal confronted with any learning problem is far more likely to drift through a trial-and-error series than is the animal that is highly motivated and attentive. True, it can be contended that the starving rat turns in a more dynamic behavior series than the fed rat and, biologically speaking, attends to what he is doing. But when a less biological definition of attention is given, this is not so likely to be the case. Chess, for example, is a game in which relationships play a considerable part. Of two opponents of comparable mental ability playing a game of chess, the one who attends to the game more closely will win the majority of times. In other words, the discernment of relationships is partially, if not wholly, a function of attention.

The theory of minimal cues also plays its part in reconciling mechanistic and intuitional theories of learning. Psychologists who employ the mechanism of conditioning as an explanatory theory in learning grant that the conditioned response can be attached to parts of the

¹² From *Gestalt Psychology*, by Wolfgang Köhler, published by Liveright Publishing Corporation. New York, 1929, pp. 349-50.

entire situation and, occasionally, small parts of that. Gestalt psychologists grant that a configuration is not a psychologically flat phenomenon, but that certain features of the configuration emerge, and that these emergent properties tend to move to meet the learner, so to speak. In these two phenomena we have our possible reconciliation. For, the so-called learning without practice, or problem-solving without practice, may be nothing more than the attention on the part of the learner, animal or human, to minimal cues. Response to these minimal cues may, in its incipient stages, be subobservational, and the final response which appears to be spontaneous and *de novo* may be merely the external manifestation of an elaborate internal change.

If this eclectic theory of insight happens to be correct, the implications for the school teacher are emphatic and obvious. Our classroom practice should strive harder than ever to secure attention and to teach the principles of concentration by disregarding of distracting stimuli and raising the threshold for such stimuli. In conjunction with this effort supervised practice would be given in careful response to the details of learning situations.

Forgetting

Everyone is familiar with the annoying possibilities of forgetting. The psychological nature of forgetting, however, still retains some mystery. To begin with, it is not an "all-or-none" process. We forget parts of a learning series and remember others, and we cannot tell why we have forgotten the part we have lost and remembered the parts that we have kept. We meet Mr. Jones today, forget his name tomorrow when we see him, and recall it the day after tomorrow when we see him again.

We can look at the phenomenon of forgetting in either of two ways: as a passive process or as an active one. Regarding it as passive, forgetting is the dimming of learning, usually through the mere lapse of time. This theory really holds that forgetting is a negative process and that the basic explanation of the phenomenon probably lies in a fading image or a weakening neural connection. But this theory is unsatisfactory when applied to many everyday phenomena. For example, it does not explain why we forget parts of a learning series and remember other parts. Also, it does not explain why we remember Mr. Jones' name one day and not the next.

To consider forgetting a really active process is more plausible and

more easily fits observed phenomena. This may be termed the interference theory of forgetting. According to it, the principal cause of forgetting is the interference of other learning. Although it is true that this other learning takes time, and therefore time is a factor in both theories, nevertheless the interference theory serves to explain situations that cannot be explained by the passive theory. This interference theory implies that there is considerable advantage in having some kinds of knowledge pretty well compartmentalized. If one had to memorize "The Ride of Paul Revere," for example, in a thousand different forms, with only slight changes between the forms, memory of any one of them would be a more difficult mental process than learning a completely different poem of the same number of words.

Almost all students of forgetting grant that it occurs most rapidly in a comparatively short space of time after the first complete mastery of the learning series. Kingsley describes the results of Ebbinghaus' work in 1885 in the following:

The first quantitative work on retention was done by Ebbinghaus (1885). He learned, to the point of two correct recitals, several hundred lists of thirteen nonsense syllables. He recorded the time required for the original learning and then relearned these lists after a lapse of time. The relearning required less time than the original, and the difference in time required was taken as the measure of the amount of retention at the time the relearning was undertaken. The retention for various intervals from one third of an hour to thirty-one days was determined by this relearning method. It was necessary to use a different set of lists for each interval studied because the relearning of a series would restore loss up to that point and, therefore, the time saved in relearning the same series a second time would not provide a measure of retention for the original learning. The percentages retained and forgotten as indicated by the mean time saved for relearning several series after various intervals were as follows:

Interval	Per Cent Forgotten	Per Cent Retained
$\frac{1}{3}$ hour	42	58
1 hour	56	44
$8\frac{3}{4}$ hours	64	36
1 day	66	34
2 days	72	28
6 days	75	25
31 days	79	21

These data indicate that the rate of forgetting is most rapid immediately following learning and tends to slow up for what remains as the interval lengthens. Even after thirty-one days had elapsed there was evidence of

retention in the fact that the original learning was responsible for a saving of twenty-one per cent in the time required for relearning. We find that the curve of retention for nonsense syllables, considered from the standpoint of what is retained rather than what is lost, is negatively accelerated, showing a rapid drop during the first hours after learning and a leveling off with a slower approach to zero retention as time passes.¹³

This basic principle of forgetting contains definite implications for school practice. Many teachers are satisfied when they have an individual or class up to one correct performance of a learning exercise. A review of the same exercise may not come until the end of the semester. This is an incorrect method of procedure in teaching. Reviews should follow soon after the period of complete fixation and with decreasing frequency.

Unlearning and Relearning

From the standpoint of psychology, there is no such thing as "correct" learning. Learning is simply a process that takes place, and it cannot be right or wrong. But when learning must meet certain defined objectives, then it is possible to say that it is right or wrong.

It is frequently necessary, when learning does not meet defined objectives, to undo it and replace it with other learning. Relearning, or reconditioning of the learner, is a lengthy and unsatisfactory process in many cases. Even though we do not know exactly what happens in the nervous system when learning takes place, we do know that learning has a certain psychological inertia, and persistence and replacement by a different but similar process is quite difficult.

Experience has shown two things to be of value in the process of reconditioning. The first is that reconditioning can take place when a stronger motivating stimulus is present during the reconditioning series than accompanied the original series. For example, Watson's baby, who had learned to cry at the sight of a rabbit or other furry object, learned not to cry when a furry animal was introduced at a distance with a piece of candy in the proximate environment. This simple but fundamental experiment gives important clues for much emotional and attitudinal reconditioning.

The second significant principle of reconditioning is that relearning discrete parts of a series is likely to be less profitable than relearning the entire series. This may appear at first glance to result in some

¹³ Kingsley, H. L., *The Nature and Conditions of Learning* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1946), pp. 462-63.

waste of time through overlearning, but in actual practice the time spent in connecting transition points would be still more costly.

Transfer of Learning

In whatever way the objectives of education are stated, the process itself is one in which human behavior is modified so as to be in closer agreement with some model or ideal determined by the values of society. If the behavior desired is a specific response to a defined stimulus, the process will be training directed toward establishment of that response. Many goals of education, however, are not specific, and what is desired is an improved quality of response to unpredictable problems likely to be encountered by the individual at some future time. In the modern school it is desired that learning should produce an individual who is effective in solving both physical and social problems, who is disposed to act in certain reliable and desired ways, but who exhibits the variation and creativeness in response necessary to progressive adaptation to new situations. Since even the most skillful curriculum makers cannot possibly predict all the possible situations which the pupil is likely to encounter in his lifetime, the teacher is faced with the problem of developing general modes of behavior which will be useful, when properly adapted, to a wide variety of situations. This breadth of utility is secured through "transfer of learning." The problem of "transfer" is one of the most interesting, historically, of the problems of educational theory, for the beliefs of educators in this regard often determine the philosophy, methods, curricula, and procedures of the schools under their control.

The theory of transfer of training had "common sense" origins and respected proponents. Plato and many philosophers looked upon mathematics as a study well-suited to discipline the mind and cultivate the power of reasoning. Roman educators looked upon geometry as an exercise for the "mind." Mathematics held a respected place in the curriculum for many centuries, not only because of its inherent qualities or its practicality, but also because of the belief that the study of mathematics somehow trained the mind in certain general processes of thinking.

When the study of the vernacular became acceptable in the schools of Europe, Latin and Greek maintained their place in the curriculum not only because they had value for potential scholars who would have need to read learned manuscripts in these languages, but also

because it was thought that the discipline of learning languages contained additional values. It was a widely accepted belief that mastering a difficult subject somehow trained the mind and will to meet life's problems in much the same way that physical exercise hardened muscles and prepared one to endure physical hardship. The theory of formal discipline gave support to the traditional curriculum of schools over many centuries. Faculty psychology, which thought of the mind as composed of numerous separate mental powers or "faculties" such as memory, observation, imagination, will, judgment, and reasoning, tended to support the theory of formal discipline. The theorists believed that exercise of these powers in one area of content made one more competent in the use of these same powers with other material; *ergo*, reasoning in geometry made one a more "reasonable" individual, training of the powers of observation in science made one a more "observing" individual.

The emergence of experimental psychology and a changing philosophy of education threw into some question the theory of formal discipline, although the experiments were often very sketchy. During the nineteenth century in America there was increasing attention to training for specific useful and practical skills in some schools, and during the twentieth century the curriculum of public schools included more and more courses designed to meet specific and supposedly predictable life needs. The curricular changes indicated some distrust of transfer of training and a desire to make education more "realistic." The difficulty obviously lay in anticipating specific individual needs in a dynamic society where technological change and advancement of learning, as well as social change and mobility of population, made it difficult to foresee group or individual needs.

In an early experiment, reported in 1890, James¹⁴ observed that practicing the rote memorization of passages did not significantly improve one's ability to memorize new passages. In 1892, he stated:¹⁵ ". . . all improvement of the memory lies in the line of *elaborating the associates* of each of the several things to be remembered. . . . It is a case of better remembering by better *thinking*." Increasing concomitant association, providing interesting related information, analyzing and comparing, developing pertinent understandings asso-

¹⁴ James, William, *Principles of Psychology*, Vol. I (New York: Henry Holt, 1890), pp. 666-68.

¹⁵ James, William, *Psychology* (New York: Henry Holt, 1892), pp. 296-97.

ciated with a passage, and interpreting it in light of the emerging appreciation appeared to do more to enhance the facility to memorize than rote, repetitive drill on unrelated materials lacking in meaning. From consideration of the experiments of James, and of the many others who followed him, emerged recognition of the importance of readiness for learning, motivation for achievement, and understanding as prerequisite to learning.

Another contributor who questioned some phases of transfer theories was Edward Lee Thorndike.¹⁶ An inductive study of individual cases and group experiments confirmed James' original findings. Thorndike and Woodworth stated:¹⁷ "Improvement in any single mental function need not improve the ability in functions commonly called by the same name. . . . spread of practice occurs only where identical elements are concerned in the influencing and influenced function." On the basis of research, Thorndike advocated the establishment of specific habits and training in particular skills useful in carrying out desirable behavior rather than broad general guidance in observation or reasoning or logical thinking. His followers attempted to identify specific elements in the life situation with which they might associate common elements in the school situation. Some followers went to considerable lengths to identify "identical elements" to justify the curriculum. Whatever the course content, emphasis was given to reasoning, and attention was directed to the "common" elements in related situations in order that pupils might more easily recognize old elements in new contexts. The traditional subjects of the secondary school no longer held their favored position because of their disciplinary values alone.¹⁸ Research showed that comparable advances on intelligence tests were made by pupils with similar initial ability, regardless of the curriculum followed. Thorndike¹⁹ said: ". . . the values of studies may be decided largely by consideration of the special training which they give." Another widely-

¹⁶ Thorndike, Edward Lee, and R. S. Woodworth, "The Influence of Improvement in One Mental Function upon the Efficiency of Other Functions," *Psychological Review*, VIII (May, July, November, 1901), pp. 247-61, 384-95, 553-64.

¹⁷ *Ibid.*, p. 250.

¹⁸ Thorndike, Edward Lee, "Mental Discipline in High School Studies," *Journal of Educational Psychology*, XV (January, February, 1924), pp. 1-22, 83-98; Cecil R. Broyler, E. L. Thorndike, and Ella Woodyard, "A Second Study of Mental Discipline in High School Studies," *Journal of Educational Psychology*, XVIII (September, 1927), pp. 377-404.

¹⁹ *Op. cit.*, p. 97.

known study which seemed to point up the specificity of behavior was that of Hartshorne and May:²⁰ they concluded that there was a low correlation between the individual's honesty in one situation and his honesty in another situation. Learning appeared to be specific, and if transfer was to be effected it appeared transfer itself must be planned for in the teaching process.

Judd²¹ reported a classic experiment in which he compared the success of two groups in adapting to a new situation similar to a previous one with which both groups had had experience. The group which had been given some theoretical background, from which certain pertinent generalizations could be made, succeeded in more effectively solving the new problem than the control group which learned solely by practice or experience. This experiment gave rise to a trend in teaching to emphasize valid generalizations from experience which might be more helpful as guides to action in a new situation than experience alone in a somewhat similar setting. Judd put it this way:²² "A teacher who has a broad outlook on any field of knowledge will make a single piece of information carry to the student not only a bare kernel of truth, but a whole network of suggestions by which the central truth connects with the rest of the world."

In 1941, Hendrickson and Schroeder²³ repeated Judd's earlier experiment and found that transfer of training depended not only on the information presented but also on the child's individual discovery of the solution. Teaching that emphasized the leading of children to make their own generalizations from experience came to be judged more likely to be effective in adaptation to future needs than specific teaching without generalization. Courses in geometry, to be effective in cultivating logical thinking generally, began to emphasize the general nature of systems of thought and to encourage pupils to show the application of postulational thinking to nongometric situations. Specific training without generalized principles was recognized as worth little beyond its contribution to a specific need.

²⁰ Hartshorne, Hugh, and Mark A. May, *Studies in Deceit* (New York: The Macmillan Co., 1928).

²¹ Judd, Charles Hubbard, "Relation of Special Training to General Intelligence," *Educational Review*, XXXVI (June, 1908), pp. 28-42.

²² *Ibid.*, p. 39.

²³ Hendrickson, Gordon, and W. H. Schroeder, "Transfer of Training in Learning to Hit a Submerged Target," *Journal of Educational Psychology*, XXXII (March, 1941), pp. 205-13.

In general, the research on the problem of transfer of learning—and there was much—was not clear cut, nor was it in accord with modern principles of experimental design. However, more and more educators gave attention to the process of transfer and began to plan more specifically for transfer of learning.

It came to be recognized, also, that transfer was sometimes negative, that unsuccessful or unhappy experiences inhibited the effort to attempt a solution to a new problem with a setting similar to one previously encountered without reward. Transfer of attitudes as well as skills became the concern of educators; emphasis was given to the importance of happy, successful experiences with problems which were likely to recur, in variations, throughout school and adult life. Sensitivity and critical thinking are desirable, however, so that the pupil may recognize ways in which situations are different as well as similar and so that he may become discriminating in the responses selected. Without this adaptability, responses may be stereotyped to the point of inhibition of creative or inventive responses to new situations.

Other contributions to the understanding of the problem of transfer grew out of the work of followers of the Gestaltists, who believed that insight, understanding, or generalization arise from the individual's reconstruction or reorganization of experiences. Katona's work ²⁴ appeared to indicate that a method of instruction that helped pupils to see the structure of a task, to find the relation of the form of the problem and its solution, and to organize information in a way that yielded an understandable whole was conducive to "transfer" as measured by success in similar but unpracticed tasks. More recently Hilgard and others ²⁵ have reported an extension of Katona's card-trick experiments with high school pupils assigned to two groups, a "memorization" group and an "understanding" group. They found that, although more time was required to teach the process initially to the "understanding" group than to the "memorization" group, the results of a later retention test favored the "understanding" group and that transfer to tasks requiring problem-solving all favored the "understanding" group by significant amounts. The findings on transfer ap-

²⁴ Katona, George, *Organizing and Memorizing: Studies in the Psychology of Learning and Teaching* (New York: Columbia University Press, 1940).

²⁵ Hilgard, Ernest R., et al., "Rote Memorization, Understanding and Transfer: An Extension of Katona's Card-Trick Experiments," *Journal of Experimental Psychology*, XLVI (October, 1953), pp. 288-92.

peared to confirm Katona's generalizations about the superiority of teaching by methods conducive to understanding over methods requiring rote memorization of procedures and applications. However, it should be noted that some points were in strange accord with older theories of transfer.

In conclusion, the implications of psychological study and research for teaching procedures designed to maximize transfer of learning are legion. The classroom teacher is appropriately guided by a few principles:

1. Teaching for transfer of learning is most effective if it is the teacher's conscious goal and procedure. When not teaching for transfer, the teacher is likely to lapse into teaching specifics with limited applications and to fail to arouse the imagination of pupils for the possibilities of wider applicability of what they are learning.
2. Varied curriculum materials and a wealth of available resources make it possible to enrich the associations of principles learned in one context to a variety of situations beyond the specific content of a course. For example, in a study of history many parallels may be drawn between problems and solutions of historic interest and current events or present-day world problems. Likewise, in the study of literature, parallels between the classics of literature and everyday experiences are unlimited. Films, field trips, current publications, laboratories, resource visitors, realia, and library materials supplement textbooks.
3. A variety of well-chosen examples, illustrations, and experiences frequently provides the necessary data for generalizations with transfer values. Purposeful practice, in meaningful learning, provides examples from which generalizations may be drawn. Whether the subject content be art or arithmetic, the pupil requires experience with a variety of problems and ways of solving a problem to accumulate the clues from which to choose working procedures in future problem-solving situations.
4. Classroom time spent in assuring meaningful understanding is well invested. Presenting or discovering several related interpretations of a formula, for example, gives the abstraction a reality upon which the pupil can depend much more reliably than he can upon memorization of a specific fact.
5. Understanding of the meaning of operations and the structure of problems helps the pupil to attack new problems. For example, making arithmetic meaningful by emphasizing the structure of the number system helps pupils to discover solutions to quantitative problems, whereas dependence on "rules" and "types" tends to confuse pupils who have not discovered the nature of number for themselves and do not understand the relation of a specific task to a whole family of problems and their solutions.

6. Generalizations formulated by pupils themselves, in their own words, are frequently more useful and appropriate than teacher-imposed dicta. The teacher need not be discouraged if precise formulation is slow in coming, for each refinement in the formulation should be recognized by the pupils as a necessary part of the generalization. For example, in expressing a generalization from their own experiences and observations pupils use a vocabulary which is suited to their comprehension and maturity—not always the words of a textbook. Such generalizations are frequently not only more vivid and vital than textbook statements, but are also remembered longer. Generalizations are not obvious; they are difficult to formulate adequately.
7. Pupils who are encouraged to make their own generalizations from experience and to find further applications of principles grow in their interest in and control of the world about them. For example, in nature study and science there are many opportunities to share experiences and observations which may lead to a hypothesis to be tested for its validity, accepted upon adequate evidence, and applied appropriately.
8. The teacher who points out the possibility of transfer of learning from one situation to another prepares the pupil to make that transfer at a later time. For example, in introducing a unit in biology or social studies, the teacher may legitimately refer to life situations in which the vocabulary and techniques learned will be useful.
9. The curriculum may be enriched generously with opportunities for applications of what has been learned. This requires planning and correlation among areas of the curriculum. For example, similar principles of science are applicable in music, shop, home economics, and countless other areas.*
10. An important aspect of the evaluations of learning is the assessment of the extent to which the learner has realized transfer of what he has learned in the classroom to other situations. For example, observations of pupil behavior and analyses of reports of pupils disclose the extent to which language skills learned in the language class are used in other classrooms or co-curricular activities.

Teaching for transfer of learning requires thoughtful preparation and development of lessons, but the results in terms of pupil motivation and success are rewarding. The final test or evaluation of the procedures tried may be far removed in time and place, but pupils regard with high esteem those master teachers who have stimulated the kind of learning which carries over into later work and creative enterprise. In conclusion it may be observed that neither the old theory of transfer nor the neo-experimentalists have won a complete victory. Some of the modern work has definitely tended to substantiate earlier views, but it has also modified and improved them greatly.

QUESTIONS AND EXERCISES FOR
DISCUSSION AND STUDY

- 1 • Define learning and describe the conditions under which you think it takes place best.
- 2 • Do you believe that most things that people do have a purpose? Explain.
- 3 • Why is the mind so difficult to define and describe? What is your own notion of the nature of mental activity?
- 4 • What is the reaction hypothesis? Upon what mechanical and chemical laws does it depend?
- 5 • Explain the theory of neural drainage and give some arguments for and against the likelihood of its being the best explanation of the phenomenon of conditioning.
- 6 • Name and discuss some of the differences between conditioning and association as presented by Thorndike.
- 7 • Name as many of the principles of conditioning as you can, and illustrate each.
- 8 • What are the three principal products of learning, and why is each important?
- 9 • To what extent do you agree with the description in this chapter of the nature of artistic accomplishment? If you disagree, on what basis do you rest your argument?
- 10 • What three principal laws of learning are given in the chapter? Apply each to a practical school situation.
- 11 • What is meant by the theory of "insight"? Do you feel that it is a valuable principle in explaining learning situations that you have observed?
- 12 • Name three reasons why reconditioning is important in education.
- 13 • Read one of the studies referred to in this chapter in the section on transfer of learning and describe in detail the research on which the conclusions were based.
- 14 • What techniques have you observed being used in courses you are currently taking to facilitate your transferring what you are now learning to later educational practice?

SELECTED REFERENCES FOR FURTHER
READING AND STUDY

- Aborn, M., "Influence of Experimentally Induced Failure on the Retention of Material Acquired through Set and Incidental Learning," *Journal of Experimental Psychology*, XLV (April, 1953), pp. 225-31.

- Anderson, G. Lester, "Theories of Behavior and Some Curriculum Issues," *Journal of Educational Psychology*, XXXIX (1948), pp. 133-40.
- , "Quantitative Thinking as Developed under Connectionist and Field Theories of Learning," *Learning Theory in School Situations*, University of Minnesota Studies in Education, No. 2. Minneapolis: University of Minnesota Press, 1949, pp. 40-73.
- Association for Supervision and Curriculum Development. *Creating a Good Environment for Learning*. Washington, D.C.: National Education Association, 1954.
- Atwater, S. K., "Proactive Inhibition and Associative Facilitation as Affected by Degree of Prior Learning," *Journal of Experimental Psychology*, XLVI (December, 1953), pp. 400-404.
- Ausubel, D. P., and H. M. Schiff, "Effect of Incidental and Experimentally Induced Experience in the Learning of Relevant and Irrelevant Causal Relationships by Children," *Journal of Genetic Psychology*, LXXXIV (March, 1954), pp. 109-23.
- , et al., "Qualitative Characteristics in the Learning Process Associated with Anxiety," *Journal of Abnormal and Social Psychology*, XLVIII (October, 1953), pp. 537-47.
- Blair, G. M., "How Learning Theory is Related to Curriculum Organization," *Journal of Educational Psychology*, XXXIX (1948), pp. 161-66.
- Brownell, W. A., "The Effects of Practicing a Complex Arithmetical Skill Upon Proficiency in its Constituent Skills," *Journal of Educational Psychology*, XLIV (February, 1953), pp. 65-81.
- and H. E. Moser, *Meaningful versus Mechanical Learning*, Research Studies in Education, No. 8. Durham, North Carolina: Duke University Press, 1949.
- Bugelski, B. R., *Psychology of Learning* (New York: Henry Holt and Co., 1956).
- Burton, W. H., *The Guidance of Learning Activities*, Second Ed. New York: Appleton-Century-Crofts, 1952.
- Buswell, M. M., "The Relationship between the Social Structure of the Classroom and the Academic Success of the Pupils," *Journal of Experimental Education*, XXII (September, 1953), pp. 37-52.
- Butler, Frank A., *The Improvement of Teaching in Secondary Schools*. Third Ed. Chicago: University of Chicago Press, 1954.
- Dashiell, J. F., "A Symposium on the Law of Effect," *Psychological Review*, XLV (1938), pp. 191-218.
- Deese, J. E., *Psychology of Learning*. New York: McGraw-Hill Book Co., 1952.
- et al., "Anxiety, Anxiety Reduction, and Stress in Learning," *Journal of Experimental Psychology*, XLVI (July, 1953), pp. 55-60.
- Dennis, W., *Readings in General Psychology*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1949.
- Edwards, A. L., and English, H. B., "Effect of the Immediate Test on Verbatim and Summary Retention," *American Journal of Psychology*, LII (July, 1939), pp. 372-75.

- English, H. B., *The Historical Roots of Learning Theory*, Doubleday Papers in Psychology, No. 2. New York: Doubleday, 1954.
- Estes, W. K., et al., *Modern Learning Theory: A Critical Analysis of Five Examples*. New York: Appleton-Century-Crofts, 1954.
- and Burke, C. J., "Theory of Stimulus Variability in Learning," *Psychological Review*, LX (July, 1953), pp. 276-86.
- Fattu, N. A., et al., "Partial Reinforcement Related to 'Free' Responding in Extinction with Pre-School Children," *Journal of Experimental Education*, XXIII (June, 1955), pp. 365-68.
- Gottsdanker, R. M., "Experimental Study of Fixation of Response by College Students in a Multiple-Choice Situation," *Journal of Experimental Psychology*, XXV (November, 1939), pp. 431-34.
- Green, C. W., "The Relationship between Intelligence as Determined by Intelligence Tests and the Ability to Learn as Determined by Performance in Learning Tests," *Journal of Educational Research*, XLVII (November, 1953), pp. 191-200.
- Gurnee, H., "Effect of Collective Learning Upon the Individual Participants," *Journal of Abnormal and Social Psychology*, XXXIV (October, 1939), pp. 524-32.
- Guthrie, E. R., "Effect of Outcome on Learning," *Psychological Review*, XLVI (September, 1939), pp. 480-84.
- and F. F. Powers, *Educational Psychology*. New York: The Ronald Press, 1950.
- Harlow, H. F., "The Formation of Learning Sets," *Psychological Review*, LVI (1949), pp. 51-65.
- Herrick, C. J., "Awareness in the Inductive Solution of Problems Using Words as Stimuli," *Archives of Psychology* (1939).
- Hilgard, E. R., *Theories of Learning*, Rev. Ed. New York: Appleton-Century-Crofts, Inc., 1956.
- Hill, C. J., "Goal Gradient, Anticipation, and Perseveration in Compound Trial-and-Error Learning," *Journal of Experimental Psychology*, XXV (December, 1939), pp. 566-85.
- Husband, R. W., "Intercorrelations among Learning Abilities," *Pedagogical Seminary and Journal of Genetic Psychology*, LV (December, 1939), pp. 353-64.
- Janis, I. L., and S. Feshbach, "Effects of Fear arousing Communications," *Journal of Abnormal and Social Psychology*, XLVII (January, 1953), pp. 78-93.
- Katona, G., *Organizing and Memorizing: Studies in the Psychology of Learning and Teaching*. New York: Columbia University Press, 1940.
- Kingsley, H. L., and Ralph Garry, *The Nature and Conditions of Learning*, 2nd edition. Englewood Cliffs, N.J.: Prentice Hall, Inc., 1957.
- Lorge, I., "Thorndike's Contribution to the Psychology of Learning of Adults," *Teachers College Record*, IV (May, 1940), pp. 778-88.
- Low, C. M., "What Principles of Learning Imply for Guidance," *N.E.A. Journal*, XLIV (January, 1955), pp. 18-20.

- Lowell, E. L., "The Effect of Need for Achievement on Learning and Speed of Performance," *Journal of Psychology*, XXXIII (January, 1952), pp. 31-40.
- Lucow, W. H., "Estimating Components of Variation in an Experimental Study of Learning," *Journal of Experimental Education*, XXII (March, 1954), pp. 265-71.
- Mandler, George, and S. B. Sarason, "A Study of Anxiety and Learning," *Journal of Abnormal and Social Psychology*, XLVII (April, 1952), pp. 166-73.
- Mannello, G., "Attitude as a Conditioner of the Acquisition of New Facts among Eighth Grade Pupils," *Journal of Genetic Psychology*, LXXXV (September, 1954), pp. 85-103.
- Mech, E. V., "Resistance to Extinction of Two Patterns of Verbal Reinforcement," *Journal of Experimental Education*, XXII (December, 1953), pp. 155-63.
- Millard, C. V., "Adapting Instruction in Basic Skills to the Child's Level of Maturity," *National Elementary Principal*, XVIII (July, 1939), pp. 542-48.
- Monroe, W. S., *Teaching-Learning Theory and Teacher Education, 1890-1950*. Urbana, Ill.: University of Illinois Press, 1952.
- Moore, O. K., and D. J. Lewis, "Purpose and Learning Theory," *Psychological Review*, LX (May, 1953), pp. 149-56.
- Mowrer, O. H., "Learning Theory: Historical Review and Reinterpretation," *Harvard Educational Review*, XXIV, No. 1 (1954), pp. 37-58.
- Muenzinger, K. F., "Motivation in Learning, II," *Journal of Experimental Psychology*, XVII (1934), pp. 439-48.
- Munn, N. L., "Relative Effectiveness of Two Conditioning Procedures," *Journal of General Psychology*, XXI (July, 1939), pp. 119-36.
- Murphy, L. B., and H. Ladd, *Emotional Factors in Learning*. New York: Columbia University Press, 1944.
- National Society for the Study of Education, Learning and Instruction, Forty-ninth Yearbook, Part I. Chicago: University of Chicago Press, 1950.
- , *The Psychology of Learning*, Forty-First Yearbook, Part II. Bloomington, Ill.: Public School Publishing Co., 1942.
- National Society of College Teachers of Education, Committee on Educational Psychology, *Educational Psychology in Teacher Education*. Ann Arbor, Mich.: The Society, University of Michigan, 1953.
- Postman, L., "The History and Present Status of the Law of Effect," *Psychological Bulletin*, XLIV (1947), pp. 489-563.
- Powers, F. F., and W. L. Uhl, *Psychological Principles of Education*. New York: Appleton-Century, 1933.
- et al., *Psychology in Everyday Living*. Boston: D. C. Heath, 1938.
- Sand, M. C., "Effect of Length of List upon Retroactive Inhibition when Degree of Learning is Controlled," *Archives of Psychology* (1939).
- Schmeidler, G. R., "Retroaction and Proaction in Serial Learning," *American Journal of Psychology*, LII (October, 1939), pp. 592-600.

- Sheffield, Fred D., "Hilgard's Critique of Guthrie," *Psychological Review*, XLVI (September, 1949), pp. 284-91.
- Sherriffs, A. C., "Modification of Academic Performance through Personal Interview," *Journal of Applied Psychology*, XXXIII (August, 1949), pp. 339-46.
- Simpson, Ray H., *Improving Teaching-Learning Processes*. New York: Longmans, Green, 1953.
- Sisson, E. D., "Retroactive Inhibition: the Temporal Position of Interpolated Activity," *Journal of Experimental Psychology*, XXV (August, 1939), pp. 228-33.
- Skinner, B. F., "Science of Learning and Art of Teaching," *Harvard Educational Review*, XXIV, No. 2 (1954), pp. 86-97.
- Skinner, C. E. (ed.), *Readings in Educational Psychology*. New York: Farrar and Rinehart, 1937.
- Smith, H. L., *Relation of Retention to Speed of Learning*. Bloomington, Ind.: University of Indiana, 1939.
- Stolurow, L. M. (ed.), *Readings in Learning*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1953.
- Symonds, P. M., "What Education has to Learn from Psychology," *Teachers College Record*, LVI (February, 1955), pp. 277-85.
- Thorndike, E. L., *Human Learning*. New York: Appleton Century-Crofts, 1931.
- , *The Psychology of Wants, Interests, and Attitudes*. New York: Appleton-Century-Crofts, 1935.
- Thorpe, L. P., and A. M. Schmuller, *Contemporary Theories of Learning with Applications to Education and Psychology*. New York: The Ronald Press, 1954.
- Tilton, J. W., "Intercorrelations between Measures of School Learning," *Journal of Psychology*, XXXV (April, 1953), pp. 169-79.
- Trow, William Clark, *Educational Psychology*, Second Ed. Boston: Houghton Mifflin Co., 1950.
- , *The Learning Process*. Washington, D.C.: Department of Classroom Teachers, American Educational Research Association of the National Education Association, 1954, 33 pages.
- Valentine, C. W., *Psychology and Its Bearing on Education*. New York: Philosophical Library, 1951.
- Van Til, W. A., "Task of the Educator," *Yearbook of the Association for Supervision and Curriculum Development*. Washington, D.C.: National Education Association, 1953, pp. 1-21.
- Vinacke, W. E., *The Psychology of Thinking*. New York: McGraw-Hill Book Co., 1952.

8

MOTIVATION AND LEARNING

Introduction

The basic purposes of the school are designed to assist the pupils towards the goal of emotional stability, intellectual competence, and effective participation in the community.¹ Many subpoints are implicit in these broad purposes: (1) it is necessary for the learner to master some of the major aspects of the cultural inheritance; (2) vocational competence is of utmost importance; (3) personal-social efficiency must be developed; knowledge for its own sake is not sufficient for the demands of life; it must be put to effective use; (4) if this aim is to be accomplished, a reasonable degree of emotional maturity and social responsibility must be developed. From these truisms it follows that mastery of subject matter is not enough for the school to impart.

Fortunately, the achievement of these outcomes is not an all-or-none matter. Maturity is a relative concept, involving the individual's experiences, chronological age, level of education, and degree of competence in meeting the problems of everyday living. Parents and teachers, therefore, require an understanding of the complex processes of psycho-social development. At each level of development, new

¹ One of the most important books on the theory of education to appear in recent years is *General Education in a Free Society* (Cambridge: Harvard Press, 1945). For a basic understanding of aims and purposes of nonvocational education, few experiences are more rewarding than a study of H. H. Horne's, *The Democratic Philosophy of Education* (New York: The Macmillan Co., 1932). The point is that educational psychology becomes a meaningless study when it is approached from any other standpoint than the institution of the school, in which children are presented with guided situations for purposeful learning.

learning experiences may be introduced to foster this process. Since an infinite number of factors affect the pupil's ability to benefit from guided experiences in development, it is essential that there be a valid knowledge of facts and principles of normal physical growth, of the symptoms of mental ill-health that require attentions of specialists, and of all the personal-social experiences which, for better or worse, affect progress toward these goals.

By definition, the school is expected to make substantial contributions to the development of the learner. Similarly, the institutions of the family and the church are expected to take heavy responsibilities. Certainly, the challenge of teaching the pupil to adjust happily to other persons is basic in fostering growth towards good citizenship in a democracy. Good will, however, is scarcely enough. Effective citizenship also necessitates intellectual competence. In the justified concern for the emotional health of the learner, it may be easy to overlook the requirement that knowledge has to be attained; that the intellect must be developed. This responsibility has traditionally been assigned to the school. In a commendable spirit of enthusiasm for "the wider problem of method" it has sometimes been overlooked in recent years. Furthermore, growth towards emotional maturity, and towards intellectual competence are not sufficient by themselves. An enlightened, democratic system of values must be acquired.

These purposes imply the principle that their achievement must be a dynamic enterprise. The word *dynamic* is a troublesome, ambiguous concept if one becomes involved in semantic niceties. On the other hand, it may arbitrarily be used to connote meaningful activities which promote psycho-social development. These occur in the form of experiences on the part of the learner. *Experience*, also, might involve a quibble unless once again a bit of arbitrariness is tolerated. Here *experience* is used to connote a type of learning in which isolated facts are not assigned to be mastered by rote in order to "please the teacher, who, in turn, must follow the course of study." It does connote activities, hard and dull at times, which are perceived as meaningful phases of the total process of growing towards adulthood. These experiences enrich present competences and understandings on the part of the learner. More importantly, they are the necessary precursors for more important experiences to come later on during the developmental process.

The Psycho-social Setting²

For descriptive purposes, it is helpful to define three somewhat exaggerated settings in which the learner may find himself placed.³



Purposeful activity can be observed in these pupils, who are preparing copy for the school paper. (Courtesy of the Chicago Public Schools.)

Each of these situations has a distinctive *social climate*. That term is convenient to connote the degree of tension prevalent among the members of the group, the type of teacher-learner relationship, and the zest for worthwhile experiences which may foster development.

² The reference upon which this discussion is based is Kurt Lewin, Ronald Lippitt, and R. K. White, "Patterns of Aggressive Behavior in Experimentally Created 'Social Climates,'" *Journal of Social Psychology*, 10 (1939), pp. 271-299.

³ The "somewhat exaggerated settings" are, respectively, the public schools of a New England industrial city the writer attended about fifty years ago; a public school in which for several years he taught under the supervision of an unrestrained enthusiast for "unshackling the learner"; and a surviving one-room school in rural Central Pennsylvania.

Many influences implied by this term are subtle and elusive. Many implications in the word are difficult to define clearly, save by descriptions of extreme types of social climates.

The first situation used to illustrate this concept of *social climate* existed in a public school as recently as twenty years ago. A teacher rang a bell, and the boys and girls immediately lined up on separate walks. At the second ringing of the bell, the children heard the command, "Mark time!" while a march was pounded out on a tinny piano, the children moved silently into the building to deposit coats and lunch boxes. Alert teachers were stationed about to enforce the no-talking rule. This rule, apparently, the children understood to mean no smiling as well. Their faces assumed a mask-like appearance, and those of the teachers were stern and foreboding. When the children were standing by their desks, a bell rang and they ceased to mark time. At a signal, they exclaimed in unison, "Good morning, Miss A," to which Miss A replied, "Good morning, class!" Then the routine opening exercises, including the flag salute and the national anthem, were quickly concluded. At the tap of a bell, the children took their seats quietly and assumed the position of attention. This, it was explained to visitors, was a superior demonstration of discipline: feet at a slight angle, heels together; back touching but not resting against the chair; head erect; eyes forward; and hands folded, with forearms at a 45° angle. Nonconformists were assigned to an after-school punishment hall, where they served out sentences ranging from fifteen to forty-five minutes.

A principal and supervisors walked about to rejoice in the quietness of each classroom. They smiled approval as desks were opened and books removed, for each successive recitation, with a minimum of noise. Any damage to school property, visitors were told, was taken up by the police in a conference with the parents of malefactors. Even a slight defacement of a book might bring a uniformed officer to the home for a warning visit. A uniformed truant officer visited the classroom briefly on his periodic calls. He mentioned in an audible whisper that one of the boys had been sent away to a "shelter" pending further consideration of his misdeeds. This action, it was assumed, warned the pupils of what their fate might be if they were obstreperous or defiant of authority. At recess, the pupils were marched out in orderly fashion to play decorously under watchful eyes of tired members of the faculty or to eat lunches.

The principal, however, detained some pupils during the recess period. He was an enthusiastic drill master in arithmetic, and went from room to room in the upper grades to take charge of instruction in that subject. Distressed by the slowness of a few of the pupils, he cheerfully gave up his rest period in order to give them further drills at the blackboard. Though his self-sacrifice was not gratefully received, the pupils appeared to accept this penalty with patient resignation. Some were told that further drills on cube roots after school would be required. The man appeared to be a benevolent, exacting taskmaster, fully convinced that all this hard work would be amply justified if he were able to discipline the minds of these pupils. Asked what he did with recalcitrants, he replied that they were switched on the palms with a rattan stick. When he could not inflict the punishment alone, he enlisted the aid of the burly janitor. Sometimes an irate father visited him after he had punished a girl; but, he stated, he was able to convince all of the critics that his punishments were always "therapeutic," objectively administered, and reasonable. Asked about "drop outs," he sadly confessed that most pupils obtained working papers as soon as possible or left on their sixteenth birthdays. Some, however, went on to college, and he recited their records with obvious pride.

At the conclusion of the afternoon session, the children were busily at work on "progress books." Monthly, the visitors were told, specimens of work in each subject were copied into these books. One teacher told how hard she worked to remove leaves spotted by ink or containing errors, to insert fresh pages, and then to have the samples correctly and perfectly included. These books were available at all times for inspection by parents, members of the school board, and visitors. It was learned that the superintendent of schools placed a great emphasis upon the quality of "progress books" as measures of teacher and pupil efficiency.

The second illustration of a *social climate* is taken from a school administered by a principal who was enthusiastic about the educational ideals of Rousseau. The teachers, he believed, should never impose authority upon the pupils. The best work, he believed, results when the pupils are directed by spontaneous impulses. *Sotto voce*, several teachers complained that they had to hear lengthy expositions of his philosophy of education, and that he became offended when anyone pleaded an excuse to leave the after-school faculty meetings.

early. Certainly, he appeared to be a pleasant, enthusiastic man in all his relationships with the children, and also to visitors who listened attentively to his theories. A few boys came into his office for some guidance with difficulties, but he smilingly assured them that they could solve any problems of moment to them, those not being readily solved being of no real importance to them. Since he was convinced that an honor council of upper-graders would take care of any troubles that might arise, he proposed a trip to a ball park as a better way to spend an afternoon.

Larger pupils appeared to have great freedom in walking about the corridors. The visitors were encouraged to observe some of them in an attractive library room, where they seemed to be looking aimlessly through magazines. A few teacher-pupil conflicts were observed. In each instance, the principal took the part of the pupil and chided the teacher for being a "traditionalist." He spoke hopefully of what some friends of his might accomplish if he were able to bring them down for a course of instruction to be required of the faculty. As a second-best, he stated, he would supply teachers with reading lists, hold conferences, and give talks on "new concepts in education."

At any time, pupils were free to leave a classroom for a more or less superficial reason. One of the tenets of the school, so the principal declared, was that the work should be so interesting that no one would want to leave or "even look out the window should a circus parade go by the school building." This comment, made in the presence of a teacher, appeared to frustrate her exceedingly, but she made no retort. Some of the pupils had attended a summer camp conducted by the principal and his wife. They appeared to be delighted to engage in repartee with him when he came into classrooms where they sat. He interrupted the lesson to speak briefly of the educational advantages of a summer-camp experience for all pupils whose parents might be induced to pay the modest charges.

For the most part, the teachers seemed to strive earnestly to comply with his theories. A genial confusion reigned throughout the building. "Pupil purpose is dominant here," he commented to the visitors. "Here the felt-need of the learner is the center of reference." He escorted his visitors down to an auditorium, where three young practice teachers were trying to carry out an assignment to coach some lively children for a musical show. The proprietor of a school for tap dancers was there to assist in preparing the show. Tactfully, now and

then, he tried to make himself heard as he advised a few children to urge their parents to start them "off on professional careers." At the conclusion of the day, the smaller pupils huddled in corners while the larger ones merrily raced through the halls on the way to exit doors. Only when the upper-graders had left did the small children rush towards the doors. The visitors caught the glance of the janitor, who shook his head sadly as he looked at disfigured walls and littered floors. The principal, in his farewell, spoke of a hope that some publisher would accept his manuscript on the philosophy of a pupil-centered elementary school.

The third illustration of a *social climate* was found in the last surviving one-room school building in a semi-rural county. The teacher seemed to be careless about his personal appearance, though he was obviously clean and shaven. He wore baggy trousers and a blue flannel shirt, without tie or coat. Thirty-six children, from grade one to grade eight, were learning to sing while he played the piano and taught them a simple melody. This was the period immediately before lunch hour. He invited the visitors to share lunch with him and the children, each of whom was invited to donate something for the guests' meals. His brief comments on the virtue of hospitality were listened to with respect. The day being pleasant, all sat under a shade tree to eat. Later the children were organized into play groups, with an older child in charge of each group. The teacher participated in a softball game for a while, much to the enjoyment of all.

When the afternoon session was opened, a brief time was allowed for composure and for laying out materials. A few older pupils listened to younger ones read or helped them with problems at the blackboards. A pleasant, but firm warning glance from the teacher kept their talk down to a low volume. Successive groups quietly came forward to occupy front benches, where they discussed their lessons and received directions for further study. Quick action by the teacher stopped a minor fracas at its start. Two boys had been kicking one another's shins under the desks. They appeared to accept the reprimand as a just rebuke, and then pretended to work on a geography assignment. The teacher spoke to each boy about their helping some third-graders with their geography, and they seemed to be delighted with this responsibility. After a while he found chores which they welcomed as a relief from books. In a well-concealed note, he passed along the information to his visitors that these boys are retardates

who need special attentions. Seeing them wear Sam Browne cloth belts as they marshalled smaller children across the highway at the close of school, the visitors thought that they were at least dependable boys who were careful and authoritative in this duty.

Though the building left much to be desired, the *social climate* within it and on the playground was quite good. The teacher had made out thorough plans for each grade and for group activities. He had assisted the children in collecting various objects for making temporary exhibits appropriate to the season. He seemed to exercise great care in obtaining audio-visual aids from the state university on a loan basis. His directions were clear and authoritative, but presented in a kindly manner. On several occasions he took a little time to explain the reasons for certain orders. Apparently, he did not set perfectionistic standards for the children. On the other hand, he requested children to do over slipshod, careless work, and then praised them when they had met reasonable standards. After dismissal time, he spoke to the visitors of his wish that rural education were a field in which he could devote his life. Low salaries, uninterested school boards, meager equipment, and miserable buildings, however, were insuperable obstacles. Consequently, he planned to find other employment at the end of the school year. He added: "With all its discouragements, I thoroughly enjoy these pupils and this school. There's much to be accomplished in this field, but one more year will have to be enough for me."

Three different *social climates* have been defined in these brief illustrative notes on actual observations. The first *social climate* was authoritarian in nature. That is, the administrative officials set the pattern of instruction, prescribed the methodology whereby it should be mastered, and judged the results.⁴ The teachers were employed to carry out these clear-cut, unambiguous purposes. The pupils were carefully trained to be docile and to meet adult expectations. Contrary to popular assumption, the school was not conducted in a brutal manner at all. The orderliness was enforced by strict teachers, most of whom seemed to believe in the educational value of this system.

⁴ See T. W. Adorno, Else Frenkel-Brunswik, D. J. Levinson, and R. N. Sanford, *The Authoritarian Personality* (New York: Harper & Bros., 1950). A convenient summary of the authoritarian's personality make-up is found in E. L. and R. E. Hartley, *Fundamentals of Social Psychology* (New York: Alfred A. Knopf, 1952), pp. 711-13.

Since most of the overgrown pupils had dropped out of school, no one seriously challenged the authority of the teachers or the principal to administer a whipping on the palms if it was considered necessary. The pupils knew exactly what was required of them in each period into which the schoolday was divided.

The second type of *social climate* was obviously authoritarian as far as teacher-principal relations were concerned; but it was *laissez faire* in relation to the children. Since most of them came from upper-middle-class homes, they did not take undue advantage of their complete freedom. Many of the leaders were sons and daughters of members of a university faculty who tried to interest their children in working towards immediate and remote goals. Were it not for this indirect type of leadership, the situation would have been chaotic. Nothing was done to inculcate a sense of social responsibility. That omission was evident in the behavior of larger pupils who rushed heedlessly through the halls, pushing the primary-grade children aside. The freedom to make "wise-cracks" to the teachers and to fellow-pupils was an unusual characteristic of this school. Nothing appeared to be planned or controlled, except the teachers. A genial form of anarchy prevailed elsewhere in the school.

The third *social climate* might loosely be defined as democratic in nature. The enthusiasm and the patience of the young teacher were contagious. Without question, he was at all times in command of the situation, both in the old building and outside on the playground. He shared his plans and explained the reasons for his decisions whenever that seemed to be necessary. His directions were given in a pleasant, decisive manner. All the children, even the two retardates, seemed to hold him in respect. Though most of the children lived on submarginal farms, he appeared to be able to awaken interest in the world of books and other materials whereby some of the cultural inheritance is passed along. Of course, the situation was by no means ideal. Nevertheless, this *social climate* was in such contrast to the two cases previously described that even the casual visitors must have been impressed. In the first situation, nothing but frustration was used to motivate learning. In the second situation, it was almost as if one gift after another, each more imposing than its predecessor, were thrust upon the child. That type of *laissez faire* behavior is wholly unlike the give-and-take of society. Only in the third school was there any true use of a democratic philosophy of education.

The Problem of Motivation⁵

Both teachers and parents are curious to know why children behave as they do. Were the motives known, the children might be directed into more acceptable types of activity. Certainly, the "why" of children's behavior is much more important than the "what." To catalogue all the activities of a school child during a single day might take reams of paper and close attention on the part of the student. Nevertheless, the activities could be catalogued and classified, the simple reason being that they are observable data. Motives, however, are always inferences—no one has ever seen a motive.

An adolescent who keeps asking his parents to allow him to learn to drive the family automobile is, as every parent knows, highly motivated. He *might* be motivated by a desire to drive recklessly at high speed. In turn, his mother's objections *might* be motivated by her fear of an accident to her son. His father's refusal *might* be motivated by speculation on the cost of repairs to the car. Indeed, behavior is motivated in all three of them. Yet, it is evident that in each case other motives could exist to explain their behavior. The boy might be eager to learn merely to enhance self-confidence. The mother could be reluctant because she would like to have more use of the car herself during the coming months. Father's hesitancy might be attributable to his intention to purchase a second-hand car for his son in the near future, driving lessons to be included with the sale. Still other motives *might* be inferred, *ad infinitum*. Motives are inferences, not observable data.

At this point, no doubt, the discussion has become *frustrating*.⁶ If so, that was in part the intent. A frustration is any obstacle that upsets complacency. Subjectively, it may be experienced as a mild degree of curiosity, impatience, and, sometimes, irritability. It was preceded by an *instigator*. That, in this instance, was an example or two to indicate that *motive* is really an indefinable word. Clearly, there must be something else towards which this account is directed. The frustration must be removed or palliated by behavior directed

⁵ See the *Forty-ninth Yearbook*, National Society for the Study of Education (Chicago: University of Chicago Press, 1950), Part I.

⁶ The discussion is partly based upon John Dollard, L. W. Doob, et al., *Frustration and Aggression* (New Haven, Conn.: Yale University Press, 1932). See also A. L. Baldwin, *Behavior and Development in Childhood* (New York: The Dryden Press, 1955), Chapter 18.

towards a goal. Now, then, an arbitrary definition may start to be indicated as a result of a tedious, but necessary, preliminary account. The *instigator* arouses an unset in complacency (that is, it *frustrates*), and the resultant activity is goal-directed. If that is a valid analysis, the motive, as Woodworth has taught, is the activity-in-progress. When the goal has been reached, the motive no longer exists. Likewise, if there were no instigator in the first place, there would be no motive at all.

Each term requires amplification and illustration. The instigator may be an incentive, such as the possibility of having one's name placed on a list to receive special recognition or to have one's drawing chosen for an exhibit. No metaphors are needed to define incentives. They are observable, tangible matters. The teacher makes clear by her approval or criticism those activities in which the pupils take part. It may suffice to gain her approval by learning some item in the curriculum. The point is that an incentive must be clearly perceived by the learner if it is to serve as an instigator. For the college freshman, graduation is so far away that the lure of a *summa cum laude* status at Commencement is hardly adequate as an incentive. Immediate goals have to be defined. Noting one's progress in a well-spaced series of examinations might be an incentive to master a difficult subject. Of course, if the incentive is not perceived as an instigator, motivated behavior does not occur.

Teachers, therefore, should be clear and explicit in defining meaningful incentives which will act as instigators for the learner. The acquisition of knowledge-for-its-own-sake is not an incentive or an instigator, except, perhaps, for a few learned, mature scholars. For example, little Helen admired the way older children roller-skated along the sidewalk. She expressed the hope that, after much practice, she, too, might become adept. Her brother, George, hoped to become the pitcher for a baseball club later in the spring. He greatly enjoyed TV broadcasts of games, and closely followed the pitchers he admired. Dissatisfied, naturally, with their present levels of performance, both children practiced to improve their skills. They had a more or less clear understanding of what they wanted. For Helen, it was to skate as well as the older skaters. For George, it was a status on a junior team. Through continued practice sessions both children learned to establish realistic levels of aspiration and to derive much satisfaction from their modest competence.

The activity-in-progress may reach disorganizing proportions and impede the learner's chances to reach the goal. Bill, for instance, had to repeat a course four times before a charitable instructor assigned a minimal grade. He became profoundly disorganized in examinations on elementary French grammar. Friends who had stayed up practically all night to tutor him often believed that he was prepared to do fairly well on an examination. Bill, however, reported that he became so tense that he experienced nausea, perspired freely, and forgot the paradigms. In turn, the instigator became even more powerful. Unless he passed the course, his degree would have to be withheld. Each examination, therefore, was a crucial episode in the life of this student. At length, he arranged an instigator for a sympathetic instructor. Soon, Bill truthfully said, he would be inducted, undergo basic training, and be sent into combat. He might never be able to return to the college. Then he adeptly defined the goal for his sympathetic auditor. A passing mark would terminate the whole affair happily, and, of course, Bill did pass.

Instigators vary in strength, and there are considerable numbers of individual differences in responsiveness to them. Some children respond favorably to a challenge; others are frightened by any test of their abilities. A familiar illustration may clear up some of these subtleties. Here is the problem often given to upset the complacency of students of psychology:

At noon each day a steamship departs from New York City for Cherbourg. At the same hour another steamship leaves Cherbourg for New York City. Everyday for a full week this schedule is maintained. The sailing time is exactly seven days. How many ships would the Monday ship meet on its way from New York City to Cherbourg?

First, it must be determined whether or not the problem is clearly stated. Then, some interesting dynamic principles may be observed:⁷ (1) some people enjoy "brain teasers" and welcome another challenge to their wits; (2) others may be a bit aggressive in asserting that this is a waste of time; the hostility may be directed towards the textbook, the course, or even a neighbor; (3) still others may skip the entire section in which this problem has been placed; (4) some, perhaps, will be irked to know that the answer is fifteen, not seven.

⁷ Suggested by Philip Eliasberg, *Why We Act As We Do* (New York: Alfred A. Knopf, 1946).

They will be aggressive in verifying their own solution and trying to disprove this one. Here are illustrated the four major types of responses to instigators. First, by trial and error or insight, the problem may be correctly solved. Second, the frustration may arouse displaced hostilities. Third, the challenge may be completely ignored. Fourth, an incorrect solution may be argumentatively defended. This little problem, of course, is nothing but a diverting exercise. The principles which may be derived from the four ways to meeting the problem, however, are directly applicable to everyday situations in the classroom.

Self-initiated Activity Versus Adult Imposed Tasks

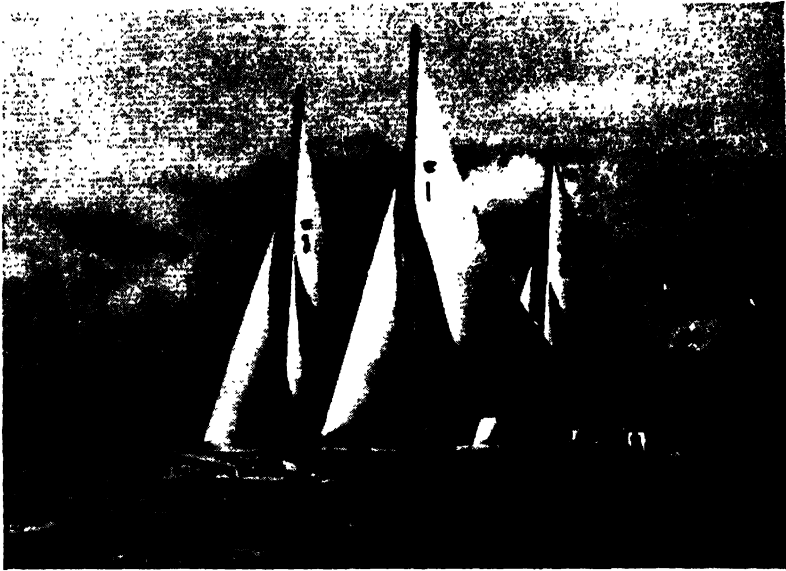
It is a truism to point out that goal-directed behavior is most persistent and enthusiastic when the learner's own instigators are operative.⁸ If a goal is clearly perceived, and if the means for reaching it are within the competence of the learner, an amazing output of energy may direct the purposeful behavior. Experiences which build up self-confidence are essential. Much training in putting up with temporarily frustrating circumstances is needed.⁹ These circumstances must be perceived as but temporary features of the situation. The learner must acquire the confidence that, with the expenditure of increasing amounts of work, he can eventually reach the goal. By corollary, the goal must be perceived in realistic terms. It must be neither too high nor too easy. Of utmost importance is the requirement that the learner have a sense of urgency to work toward the achievement of the goal.

Some enthusiasts mention the desirability of making school work as enticing as the spontaneous activities undertaken by children in out-of-school life. That attitude implies acceptance of a laissez faire theory of the function of the school. Not only is it frustrating for a teacher to listen to such notions, but also it is a superficial concept. The important factor in effective learning is that the task be per-

⁸ See A. L. Baldwin, *op. cit.*, pp. 137-51.

⁹ See, for example, R. Barker, T. Dembo, and K. Lewin, "Frustration and Regression: an Experiment with Young Children," *State University of Iowa Studies in Child Welfare*, 18 (1941), p. 1. See also P. S. Sears, "Levels of Aspiration in Academically Successful and Unsuccessful Children," *Journal of Abnormal Psychology*, 35 (1940), pp. 498-536.

ceived as an opportunity, not as an imposition. Any qualified teacher knows how to define a learning situation as an opportunity for the pupils. This procedure is quite at variance from a dependence upon fleeting, self-initiated enthusiasms which, in many instances, induce



All learning does not take place in the classroom. In the sailing of boats motivation is no problem.

no development towards psycho-social maturity. On the contrary, it implies the possibility of creating new motives at each new level of development. Even a disagreeable chore may be perceived as an opportunity if it is appropriately perceived. Everyone will recall, for example, how Tom Sawyer defined his chore of white-washing Aunt Polly's fence. Once he took the job out of the realm of an adult-imposed, unpleasant task, and defined it as an opportunity, he had many volunteers to do the work.

A class in general science, for instance, might be interested in arranging terrariums. The task must be feasible, and hence there should be access to specimens and to the necessary equipment. Cases are not impossible to make at very low cost. Specimens may be gathered on field trips. The less the class depends upon supply houses

and the more it improvises, the better will such an activity be defined as an opportunity. If such an activity has any educational value whatsoever, it will lead at least a few students on into further, and more rewarding, experiences. If the task is defined in the manner in which "progress books" are imposed in the authoritarian *social climate*, the dynamic aspects of the learning process will be unsatisfactory from every point of view. In short, the enticement of any activity lies in the manner in which it is perceived. Worthwhile experiences may be skillfully defined as opportunities, even though they involve much hard work on the part of the learner. The procedure is wholly unlike that encouraged by the principal in the *laissez faire* situation.

Since this is an issue often misunderstood by parents and teachers, a further exposition may be required. Many adults have been chagrined to note the difference between the zestful practice of a candidate for a position in a high-school band and the resigned indifference with which an algebra lesson is undertaken.¹⁰ Perhaps the most important difference lies merely in the way these two tasks are perceived. The candidate for the band is fully aware of the hours of practice which will be required, of the competition for status in the organization, and of the goal which may be attained. The assignment in algebra, on the other hand, may be perceived as an imposed task that may, for some unknown reason, be a part of the curriculum, but that certainly is not an opportunity for the learner. It is perceived as an adult-imposed task. The remedy is not easy to apply. It involves much more than a redefinition of the situation. That would be little more than an exercise in semantics. A program of re-education in attitudes is necessary.

Cultural Lag and Attitudes Toward Development Through Education

Cultural lag may be defined for present purposes as the tendency of ways of doing to persist after growth of understanding has made them outmoded. Two attitudes towards the psychological development of the pupil represent a great amount of cultural lag. First,

¹⁰ For a helpful discussion, see A. D. Woodruff, *The Psychology of Teaching* (New York: Longmans, Green, 1948). See also L. B. Abel, "The Effects of Shift in Motivation upon the Learning of a Sensori-motor Task," *Archives of Psychology*, 29 (1936), p. 205.

there is the old tradition that children must be disciplined. Play may be tolerated while children are very young, but as soon as possible hard work must be imposed. In order to prepare children for the rigors of adult life, perfectionistic standards must be applied in judging the quality of their work. Through a course of training, administered in a benevolently authoritarian manner or directed by a heavy hand, the child will be strengthened in mind. In contemporary folklore, this outmoded concept still survives with much strength. The mind-training value of certain disciplines, to paraphrase the notion, is stalwartly upheld by many critics of modern trends in education. Secondly, there is another old tradition, traceable to Rousseau, that children have inherently noble impulses which ought not to be thwarted. Education seems to connote a process of "leading out that which is within" the child. Some, in fact, would object to the phrase "leading out"—the less adult meddling, the better! Though, of course, neither tradition is scientifically tenable, both do persist as examples of cultural lag.

Some of the critics of modern developments in educational procedures base their strictures upon concepts as fantastic as these. They see no alternative to authoritarianism than the mild anarchy of *laissez faire*. Actually, however, opportunities may be created as instigators to purposeful learning. Attractive materials, qualified teachers, an aesthetically pleasing building—these can scarcely fail to initiate stimulus-induced maturation. This concept has some basis in experimental findings, and it has much justification in a general empirical theory. Maturation, it may be stated, need not result merely from biological impetus. It may be initiated by stimulating opportunities. Once a course of stimulus-induced maturation has been initiated, say, in the development of some competence in arithmetic skills, even though a vacation intervene it is likely that growth in the desired direction may continue. From the conceptual point of view, interest patterns may be created, and then they are likely to be sustained and expanded over a long course of time. Fortunately, one need not wait "for nature to take its course." Without in any sense trying to use hot-house forcing methods, the adult may stimulate psycho-social development through the creation of opportunities which the learner is ready to benefit by. Thus, in a sense, the stimulus induces a healthy type of maturation.

Instructional Methods and the Dynamics of Learning

The educational process may be conducted in three diverse ways. In the first place, the curriculum may dominate the school. The teachers' principal function is that of imparting it to the learners. They, in turn, must adapt themselves to a rather inflexible routine. The principle of reinforcement is invoked to "stamp in" the desired responses and to "stamp out" those that are not approved. The teachers, as a rule, pay more attention to the correction of errors than to rewards for acceptable responses. One satisfying feature of this type of educational procedure is its clarity of purposes. The major aim, of course, is to master the curriculum. Consequently, much time is given to drill, to the measurement of outcomes, and to remedial instructions for those who require them. Difficult examinations are customarily administered at regular intervals. These measure not only pupil achievement, but also teacher efficiency. Those learners who cannot adapt themselves to such a rigorous type of instruction fall by the wayside. Usually, the standards of evaluation are set at an intellectually respectable level. Pupil "mortality," therefore, increases from grade to grade. An increasingly more difficult curriculum must be mastered, at least to the extent that rote-memory examinations can be passed.

At its best, this type of educational process may be observed in the French lycée. Only a small number of pupils are admitted each year. The standards of achievement are high. The curriculum is inflexible. The number of failures is high. Whenever this system is criticized, many educated men and women rise in its defense. They survived the keen competition; and, naturally, they attribute their after-school success to the type of secondary and university education they underwent. Approximations of this drill-type education were to be found fifty years ago in many New England classical high schools. The teachers could rely upon their pupils' fear of failure and disgrace as a major instigator to memorization of paradigms, mechanics of writing, historical facts, and mathematical skills. The fact that only those with relatively high levels of aspiration and intelligence could survive in this system may account in part for the speciously good outcomes.

It may be amazing to the modern student to be told that many boys and girls really enjoyed this curriculum-dominated type of edu-

cation, with its emphasis upon drill recitations and rote memorization. Those pupils, of course, were able to adjust themselves to the routine. The scores of pupils who were repelled or discouraged by these undeviating procedures just dropped out and were forgotten. The social order in those days appeared to be relatively stable. The rising tide of technological changes in modes of living might be overlooked in those days. A program of education, ages ago dynamic and purposeful for the Mediaeval pupil, could manage to survive almost into modern times by reason of cultural lag. Now, of course, it has almost entirely disappeared in this country, and serious debates about its continuation in France are frequently reported. For better or worse, this curriculum no longer meets the demands of modern life. A more potent influence in bringing about its demise is the growing knowledge of the emotional health of the learner. In this traditional pattern of education, that was entirely neglected. Another strong influence in modern education is a recognition of the need to help all learners develop toward psycho-social maturity for life in a democratic society, not to drill a select few in an outmoded course of study.

Obviously, in this type of education there would be no consideration of any dynamic principles of learning. The basic lesson procedure would be the drill, usually upon short assignments, which had to be completely mastered. Although fifty years ago few educators would have openly admitted belief in formal discipline, the curriculum implied such an acceptance of the doctrine. The one ray of sunshine in the pupil's life was the clearness of the whole procedure. The teachers set the aims, supervised the learning conscientiously, and established the standards of evaluation. All the pupil had to do was to adjust himself, if he could, to a benign, firm authoritarian social climate.

In the second place, the learner himself may be the center of reference. If any adjustments have to be made, school routine and curriculum are to be modified. The learner's own motives are involved in the choice of the activity, the definition of the goal, the means whereby to reach it, and the evaluation of the outcome. The founder of educational psychology, Johann Friedrich Herbart (1776-1841), was among the first to object to an overemphasis upon drill lessons and what now would be termed authoritarian control over pupils.¹¹

¹¹ J. F. Herbart, *Lehrbuch der Psychologie*, 1816.

He believed that one of the primary understandings to be imparted through the school is the need for each pupil to become an effective member of society. The best way to prepare for this outcome, he believed, is to teach children how to live happily together at their present stage of development. Personal, social, and ethical development—these, he wrote, should be the primary aims of the school. They must have priority over subject-matter mastery, important though that may be. Since drill lessons contribute very little to these three aims, they should be used sparingly. The pupil's own interests and purposes are the best guides in the accomplishment of worthwhile progress toward maturity.

Herbart believed that it is not at all impossible to lead pupils to recognize the importance of mastery of skills and factual details. He certainly did not advocate that they should be taken out of the curriculum. On the contrary, he believed that they are learned effectively only when the pupil has some awareness of their importance in educational development. In his judgment, the older schools failed to teach the fundamentals to children because the learner could perceive no purpose or usefulness in materials of this type. Therefore, Herbart sought to reform the curriculum in four major ways. First, he arranged the subjects in improved sequences that were more appropriate to the learner's maturational status. Thus, he anticipated the modern concept of readiness. Second, he utilized every occasion to appeal to the interests of boys and girls. He hoped that with greater maturity they would develop intrinsic motives for continued progress in mental, social, and character development. Third, he believed that the learner should be challenged by the opportunities in an effective school. Each task should be regarded as a meaningful activity, not as an adult imposition. Fourth, he believed that effective learning results only when it enriches the experience of the pupil and prepares the way for more rewarding experiences to come. Many of his views were developed and supplemented by John Dewey (1859–1952).

Learning experiences of this second level of educational procedure seem to occur in four basic patterns. First, the learner may work hard to master a set of skills because they appear to be necessary for the accomplishment of certain goals. Thus, the tool subjects have to be mastered before further progress is possible. Much hard work, for example, is required of anyone who hopes to read and speak a foreign

language. Second, the experiences may occur in the form of problems. The learner, confronted by various choices, has to bring to bear past experiences and to gain further experience if a problem is to be solved. Third, the learner may be interested in producing a more or less tangible result, such as a short story, a picture, an exhibit in a science class. Fourth, the learning experience may take the form of a self-directed study in a field of aesthetic productions, the aim being to gain a better sense of appreciation. Herbert, it should be noted, believed that the learner may need at times a gentle form of prodding. Spontaneous and fleeting interests are not sufficient to lead to genuine experiences in development.

The third level on which educational procedures may be based is a compromise between the first two that have been discussed above. Great attention is given to ways and means whereby the learner may be motivated to work toward psycho-social maturity. Whenever necessary, however, the teacher must prescribe the materials to be learned, direct the progress of the learner, and evaluate the outcome. These requirements are in the best interests of the learner, though at the time he might prefer to engage in many other activities. One of the most difficult tasks of the teacher is that of preventing these requirements from being perceived as nothing but adult-imposed tasks and procedures. When they are perceived in that way, the learning process inevitably is adversely affected. The dynamics of the educational procedures are removed. The learner must master the curriculum by drill, trial-and-error, or conditioning. There is little or no cognitive activity. If, however, the meaningfulness of the material is made clear to the learner, and if he perceives the unit as a worthwhile activity for him to undertake, the experience leads to development. The fact that pupil-interest would be a poor guide for all the activities in an efficient school does not mean that interest cannot be aroused by a skillful teacher. Intelligent efforts to create interests in desirable activities are the distinguishing feature of this third type of learning situation.

Competition and Its Place in Education

Many children, especially those from middle-class homes, are under pressure to be outstanding in schoolwork. If old-fashioned report cards are used, many a home is precipitated into gloom when the children are not at the head of the class. The use of symbols of an

honored status may enhance some of these problems. Competition for status on the honor roll, the highest marks, and other awards is often intense and disruptive. Clearly, when the marking involves comparisons among all the learners in a grade, only a very few can hope to receive highest honors.

Some of the outcomes in mental ill-health should be considered: (1) the parents may set impossibly high standards for their children to achieve. Oftentimes, this ambition may be compensatory for their own past failures to reach the topmost marks in school. In a sense, the children must achieve vicariously for the parents; (2) there tends to be an overemphasis upon marks, not upon development towards psycho-social maturity; (3) those who do not achieve the expected recognition may feel defeated, become rebellious, develop a distaste for school, or seek to gain specious triumphs by being coached, by deceit, or by evasive techniques of deceit; (4) an overemphasis upon competition for marks may lead to authoritarian methods of control in the school. In establishing comparative statuses of merit, the teacher must be the final judge. This fact leads to a heavy emphasis upon tests that measure little more than subject-matter mastery.

To be sure, in out-of-school life there is intense competition for preferment. Many adults are inevitably doomed to bitter disappointments. One of the major functions of the school is that of teaching boys and girls how to cope with reality. To a considerable extent, this preparation may be accomplished by presenting the learner with experiences which build up some degree of self-confidence. In the school it is possible to control the environment, and hence to build up realistic levels of frustration tolerance and self-knowledge. The learner has to acquire a valid awareness of what he is limited to as well as of what he is kept from. This knowledge must be developed by slow degrees, lest it have a traumatic effect upon a young pupil.

Competitions among equals may be very helpful in building up insights regarding one's status. Of no little importance are competitions with one's own former performances. This competition is one of the pleasures of a golfer. He is pleased if he improves his score from week to week. Justifiable self-esteem may be derived from one's knowledge of progress, with former performances as a standard for comparisons. The point is that competition is not bad in itself; it becomes bad only when competitive situations are misperceived. Parents and teachers, consequently, should be patient in defining these

situations and in making clear the basis upon which comparisons are made.

Vaughn designed an interesting and important experiment which has applicability to this discussion.¹² He had some subjects practice marksmanship for six weeks. Three instigators were used: (1) to obtain the highest score in the group; (2) to attain the highest score on the basis of a handicap; (3) to make the greatest relative improvement. He found that each participant did best under those conditions which were most favorable to him. Thus, the best marksmen made their highest scores in open competition. The average marksmen did their best when they were in a handicap contest. The poorest ones did best when they were scored on the basis of relative improvement. The conclusion suggested is that the personality make-up, past experiences, and individual differences should be taken into account in competitive situations. These complex matters are more important than futile attempts to rely upon a single instigator for all learners.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • What should the school accomplish other than to teach subject matter? Is the school responsible for things that might better be done in the home or through some other institution of society? If so, why?
- 2 • *Maturity* is a difficult word to define. How would you define social maturity? emotional maturity? intellectual maturity? Do these adjectives overlap?
- 3 • Maturity is a relative concept. Discuss it relative to the age of the learner; sex; educational level; experiences in the home and the neighborhood.
- 4 • How could a learning activity be made meaningful to a preschool child? Explain fully. How could the assignment in learning French irregular verbs be a meaningful experience? What is the difference between an adult-imposed learning activity and one that is perceived as an opportunity?
- 5 • Illustrate from your own reading or experience the three major types of *social climates*. How would you be affected by each of these?
- 6 • Is "discipline" really easier to maintain in an authoritarian setting

¹² James Vaughn, "An Experimental Study of Competition," *Journal of Applied Psychology*, 20 (1936), pp. 1-15.

than in a democratic setting? Is the mature individual controlled by fear of consequences or by "inner factors"? Explain and illustrate.

- 7 • Many critics of the modern school are caustic in their strictures. To what extent are their criticisms justified? Would it be possible to return to a teacher-dominated education in "fundamentals," with none of the "frills" in the modern school? Defend your answer.
- 8 • Why would the drill lesson, whatever disguise it may put on, be the only procedure that could possibly be used in the authoritarian school? If you disagree, what are your reasons for the dissent?
- 9 • Is it possible to "create" higher patterns of motives in children? How can it be done? Are some motives "functionally autonomous"? What does that mean?
- 10 • Is the discussion of competition as an instigator to purposeful work an unrealistic point of view? Are the great humanitarians motivated by zeal to compete? Is it possible to control and guide competitive activities so that no one is "hurt" and that every one benefits?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Association for Supervision and Curriculum Development, *Creating a Good Environment for Learning* (Washington, D.C.: Association for Supervision and Curriculum Development, 1954).
- Baldwin, A. L., *Behavior and Development in Childhood*. New York: The Dryden Press, 1955.
- Bird, Charles, and D. M. Bird, *Learning by More Effective Study*. New York: Appleton-Century-Crofts, 1945.
- Bugelski, B. R., *Learning and Motivation*. New York: Henry Holt and Co., 1956.
- Lewin, Kurt, *Dynamic Theory of Personality*. New York: McGraw-Hill Book Co., Inc., 1935.
- National Elementary Principal, *Thirty-First Yearbook, Bases for Effective Learning*. Washington, D.C.: National Education Assn., 1952.
- Prescott, D. A., *Emotion and the Educative Process*. Washington: American Council on Education, 1938.
- Dollard, John, et al., *Frustration and Aggression*. New Haven: Yale University Press, 1939.
- Gates, A. I., et al., *Educational Psychology*, Third Ed. New York: The Macmillan Co., 1948, Chapters 9-12; 18-22.
- Kingsley, H. I., and Ralph Garry, *The Nature and Conditions of Learning*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957.
- Saul, L. J., "Psychological Effects of Emotional Tension," in J. McV. Hunt, *Personality and the Behavior Disorders*, Vol. 1. New York: The Ronald Press, 1944.

- Skinner, C. E. (ed.), *Educational Psychology*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951, Chapters 9, 18, 19, 24, and 25.
- Symonds, P. M., *The Dynamics of Human Adjustment*. New York: Appleton-Century-Crofts, 1946.
- Thompson, G. G., *Child Psychology*. Boston: Houghton Mifflin Company, 1952, Chapter 5.
- Woodruff, A. D., *The Psychology of Teaching*. New York: Longmans, Green and Co., 1948.
- Woodworth, R. S., *Dynamics of Behavior*. New York: Henry Holt and Co., 1957.

9

PERCEPTUAL-MOTOR LEARNING

If you were to think over the activities in which you engaged in the few minutes that preceded the action of opening this book to this page, you would be amazed by the vast number of different things you had done. Let us take a hypothetical "you." You sat down at your desk, turned on your desk lamp, looked up the assignment in your notebook, selected this book from the pile on the corner of the desk, filled your fountain pen, kicked off your shoes, and finally opened the book, turning a number of pages to find this one. This, of course, is a skeletonized outline of the many, many actions involved in each of the items mentioned. Some of these actions are relatively simple, some extremely complex—but all are learned.

Psychologists have identified several different types of learning. One of the simplest kinds of learning is *perceptual-motor* learning. In this type of learning, perceptual stimuli initiate motor responses. In infants, it may be illustrated by reaching for a brightly colored object; in adults, by learning to use a typewriter, playing a musical instrument, or driving a car.

Modern life demands a high level of skill in perceptual-motor activities. Speaking, reading, writing, swimming, playing golf, dancing, using tools, sewing, artistic endeavor—all entail a high measure of perceptual-motor activity.

Perceptual-motor learning involves the coordination of motor aspects with the sensory and central coordinating aspects of the learning situation.

The Development of Perceptual-Motor Abilities

THE EFFECT OF SPECIAL TRAINING

Perceptual-motor development is closely associated with the physical and mental maturity of the individual. Frequently, parents and teachers fail to recognize the importance of these factors and attempt to "force" the growth of the child. For example, a parent may try to speed up his baby's rate of growth in learning to walk, refusing to



Teaching is the art of directing learning experiences. (Board of Education City of New York.)

accept the fact that the child will not be ready to master this task until he has reached the proper stage of development. The situation is the same in school—many first- and second-grade children have not yet reached the level of development at which they can profit from an introduction to cursive writing.

This should not be interpreted to mean that the role of the parent or the teacher in the guidance of learning is essentially a passive one. Many studies have indicated that definite advantages accrue when young children are given special training in perceptual-motor skills. It must be emphasized, however, that training which is given at too

early an age, or training which is given at too late an age, is of little value in promoting the growth of skill in a perceptual-motor activity.

Guiding the Acquisition of Perceptual-Motor Skills

VARIETIES OF PERCEPTUAL-MOTOR LEARNING

Perceptual and motor factors enter into different activities to differing degrees. In some activities, both perceptual and motor factors are relatively simple, as in sawing a piece of wood, or in tossing a ball to a companion. In other activities, the perceptual factor may be relatively simple, but the motor response may be relatively difficult, as in drawing a map to scale. In still others, the motor response is the simple factor, while the perceptual factor creates the difficulty, as in tracing a path through a complicated maze or in selecting the proper bolt or screw from a large assortment to use in a simple construction project. In some activities, however, both the perceptual and motor aspects of the activity are relatively difficult, as in playing a Beethoven concerto. In addition, many intellectual and emotional factors, which vary according to the type of activity and its degree of complexity, enter into any learning situation.

Not only are different combinations of perceptual and motor factors seen in different activities, but the activities themselves may differ in character. In some activities, the child may be called upon to develop a perceptual-motor skill which is, for the child, almost entirely new. For many school pupils, for example, the development of the skills of handwriting, of playing a musical instrument, and of working in the laboratory constitute relatively new perceptual-motor skills. The adjustment of the microscope, when first encountered in the science laboratory, calls for a fine perceptual-motor coordination, which, for most individuals, is entirely new.

In other activities, the individual may be called upon to integrate motor skills already established with new stimuli, or perceptual factors. In this kind of perceptual-motor learning, the situation requires that motor skills already mastered by the person be related to a new stimulus. When learning to ride a bicycle, for example, one brings to the learning situation all the sensori-motor abilities that he has acquired in learning to walk and to maintain his equilibrium. As a

consequence, learning is more rapid than it would be if the individual had to begin with learning the fundamental perceptual-motor skills.

Similarly, the student learning to drive a car in a high school driver trainer course is not called upon to develop any motor responses which are not already part of his repertory. To a large degree, all of the movements which he must make have been learned previously. Rather, the essence of this kind of perceptual-motor learning lies in integrating, or forming a new synthesis of, motor responses in order to meet the demands of the new situation.

Perceptual-motor learning in the school situation may take still another form—the development of dexterity and accuracy, the extension and refinement of skills already learned. The pupil must be helped to become more expert in reading, in operating a wide variety of office machines, in coordinating his activity with that of others in



The learning of motor skills can be meaningful and interesting.
(Board of Education City of New York.)

playing a team game. In these situations, the basic perceptual-motor skills have been established in the past; the emphasis lies in developing quality of performance.

Bearing in mind the many different forms and the many different ways in which it enters into the school situation, we turn now to a consideration of suggestions for guiding pupils engaged in perceptual-motor learning. Of course, not all of these suggestions apply with equal force to all varieties of perceptual-motor learning, but all of them are of value in some phase of perceptual-motor learning.

PROVISION FOR INDIVIDUAL DIFFERENCES

In almost every human characteristic which has been studied, a wide range of individual differences has been noted. Since variability within groups increases with age, differences between children are quite striking by the time they enter school. Some rainy day, observe a group of kindergarten children getting dressed to go home. Some have dressed themselves without assistance and are waiting impatiently at the classroom door, others need help with their boots, while some still have difficulty with buttons or zippers.

In organizing learning experiences in the perceptual-motor areas, the teacher must be cognizant of, and take into consideration, individual differences in development. Only rarely will the teacher find occasion to develop lessons for his entire class at one time. To be sure, the entire class may be taught the sequence of movements involved in writing the letter "p." Once this initial step has been mastered, however, different pupils will need varying amounts of guidance and practice to demonstrate and maintain acceptable performance. Provision for individual differences is important in all perceptual-motor skills—in learning how to use the comptometer for multiplying, in shooting a foul shot, in sewing a French seam, in splicing wires.

THE ROLE OF MOTIVATION

Few pupils can see the need for learning how to divide a fraction by a fraction, or for analyzing the grammatical construction of a long, involved sentence. The values of reaching a high level of skill in social dancing, in tuning up a motor, or in typewriting, however, are far easier to see. The teacher will find, then, that the level of

motivation of the learner is generally relatively high in the learning of most perceptual-motor skills.

When the motivation of the learner appears to be low, the teacher might well examine his practices in teaching. Is he demanding too much of the pupil? Is he setting an unattainable standard in view of his level of development? Is he placing too much pressure on the pupil to achieve a given level of performance? Or has the practice of the skill become the sole objective of the teaching process, rather than the satisfaction to be gained in the use of the skill in a real situation? The teacher must remember that few of us would be content to learn how to serve a tennis ball, without ever playing an opponent in a real game.

The teacher who wishes to motivate his pupils well must strike a neat balance between practice of the skill *per se*, and practice of the skill within the complex of a real situation. The typing class that prepares the school's mimeographed announcements, the school print shop that turns out stationery and program cards, the art class that designs Open School Week posters is engaged in an activity that represents a potentially excellent opportunity for learning perceptual-motor skills. One must not forget, however, that the skills involved in these activities are just as important as the end result. When the mastery of skills is looked upon as only incidental to the completion of a project, the pupil may never reach the full limit of his potential development. True, we master the skills involved in playing a game of golf by playing many games of golf, but it is also important to practice putting in a clock golf game, or even on the living room rug. Although the teacher must be alert to those situations which will enable the pupil to engage in practice of a perceptual-motor skill in a meaningful activity—perhaps the most important of all motivational devices—he must not overlook the importance of isolated practice of the skill itself.

THE ROLE OF PRACTICE

In general, the more time a pupil spends in practicing a given perceptual-motor skill, the more adequately he will master that skill. Everyone knows, of course, that too little practice makes for inadequate learning. Scheduling too much practice carries with it emotional concomitants that are harmful. It would be wonderful if we could indicate exactly how much practice would be needed in order

to develop a given degree of proficiency—if we could say, for example, that in order to reach a typing speed of 35 words a minute, the pupil will need 26 hours of instruction. Of course, we cannot be nearly as specific as this. Individual differences in the physical equipment of pupils, in their motivational background, in their level of aspiration, and in their vocational goals make it impossible to determine the amount of practice needed.

Although we know very little concerning the total amount of practice which is needed, fairly definitive research evidence is available about the length and distribution of practice periods. In the 1920's practice in penmanship was generally provided for at least 30 minutes every school day. The pupils complained that they received too much practice too often; in this instance, the pupils' complaint was well-founded. The research evidence in the field of perceptual-motor learning clearly indicates that, in order to obtain the best results, long practice periods should be avoided.

What constitutes the optimum length of a given practice period is difficult to determine, depending as it does upon the age of the pupil, the stage of learning that the pupil has reached, and the difficulty of the task that is to be learned. Thus, young children are more easily distracted and become more easily fatigued than older pupils. Their practice periods must, therefore, be shorter. At the beginning stages of a given learning activity, short practice periods should be scheduled; in later stages of the process, longer practice periods may be more profitable. When a task is difficult, a shorter practice period will prove to be less tiring.

In arranging for practice sessions, the teacher must be guided by the principle that it is important to avoid boredom, monotony, and fatigue. When the pupil repeats the same response over and over and over again, boredom reduces the pupil's incentive to improve. Excessive repetition of a task also carries with it the possibility of habituation of an incorrect pattern of response. Moreover, excessive practice reduces the opportunity of forgetting. While ordinarily this would be considered an asset rather than a liability in a learning activity, it must be remembered that forgetting helps the pupil to learn by showing him what he has failed to learn adequately. Long and frequent practice sessions often give rise to difficulties that can easily be avoided.

Not only are short practice periods to be preferred to long periods

of practice, but intervals between practice periods should not be equally spaced. It would seem that a regular alternation of periods of practice and no-practice would be productive of the best results, but available research evidence demonstrates that such routinization is not advantageous. Rather, in the early stages of learning a given task, practice periods should follow close upon each other; in the later stages, practice should be undertaken at increasingly longer intervals. For example, if a given task is first broached on June 1st, successive practice periods might be scheduled on the following dates: 6/2, 6/3, 6/4, 6/6, 6/8, 6/11, 6/14, 6/18, 6/22, 6/27, 7/3, 7/9, 7/15, 7/23, 7/30, and so forth.

Practice should take place in the context in which the particular perceptual-motor ability is to be used. Can you think of anything more monotonous than sanding down wooden surfaces, or sawing through two-by-fours, simply to develop greater skill in sanding or sawing? Is there anything more wasteful than sifting the flour for a cake, simply to practice sifting? To the young child, this might be fun; to the teen-ager, it would be just another demonstration of the foibles of adults. Of course, isolated practice such as this may have some value in the development of a skill, but it is far better to organize practice sessions that are as close to a real situation as possible. It is much more exciting for the pupil to use the school switchboard to route calls than to practice on the mock-up board in the classroom, and more learning takes place. The wise coach has his basketball team practice foul shots after his team has finished a brisk scrimmage, not before the scrimmage begins. In the real situation, they will shoot fouls in the midst of a game, not before the game starts. The child who is learning to play the piano should not practice endless scales and exercises in isolation. Rather, the same exercises and scales should be embodied in simple songs (with words) which constitute complete units rather than fragments of units. Similarly, modern methods of teaching typewriting stress practice with meaningful material, introducing the pupil to transcription of business letters at a very early stage, rather than having him spend long hours in drills on isolated letters of the alphabet or single words.

Practice may take the form of purely mental practice; there need not be actual physical performance of the particular activity being learned. Research workers have demonstrated that such mental practice has considerable value in improving performance in perceptual-

motor activities such as throwing darts and shooting baskets. It seems that the process of rehearsal: "First, I do A; then I do B; and then I do C," or a similar subvocal demonstration helps the individual learn effectively. In fact, mental rehearsal of a given activity may carry with it improvement values almost as great as the actual practice of the activity.

THE ROLE OF RHYTHM IN LEARNING A SKILL

Listen for a few moments to a skilled typist as she copies a page of manuscript. Very often, even the untrained listener will be able to detect a pattern emerging. Accented sounds will appear and some of the intervals between sounds will be longer than others. In short, the listener will be able to discern a rhythmic cycle in the typist's performance.

Once this rhythmic organization has been established, listen to another typist, equally skilled. The same phenomenon of a rhythmic cycle will be present, but surprisingly enough, some differences in the over-all pattern will be evident.

This difference in the performance of the two typists carries an important implication for the teaching of a perceptual-motor skill. Most perceptual-motor activities lend themselves to the development of a rhythmic pattern in performance. Perhaps this rhythmic aspect is easiest to see in some form of athletic endeavor, such as in swimming or in hitting a golf ball. The teacher of swimming or golf tries to develop in his pupils a smooth, free-flowing sequence of activities, with a definite rhythmic pattern. Developing a rhythmic pattern is important, and the teacher will try to help his pupils to get "in the groove." The imposition of a particular rhythmic pattern, however, as the best one to use has little value in fostering the learning of a perceptual-motor skill. The wise teacher knows that the pattern ultimately developed must rest with the pupil.

THE ROLE OF DEMONSTRATION

The teacher's role in the guidance of perceptual-motor learning goes beyond arranging for conditions of effective practice. He must also be able to demonstrate the correct method of doing a particular activity.

Compare the self-taught and the teacher-taught swimmer—rarely does the self-taught person reach the degree of mastery of which he

is capable, either in speed or style. Usually, an ineffective, wasteful stroke becomes habituated, simply because it seems satisfactory to the learner who knows no better.

In perceptual-motor areas, showing the correct response makes for effective learning. The demonstration offers a simple means of putting the learner on the right path to correct form, by short-circuiting possible inadequate responses. Verbal explanation of what to do and how to do it, films supplemented by personal demonstration and explanation, or even still photographs of good form will be of value in guiding the learner. Research has indicated that such guidance is more effective if it takes a positive, rather than a negative form. It is better to indicate to the learner that his response has been correct, rather than to stress the inadequacy of his performance.

Charting the Acquisition of Skill: The Learning Curve

A pupil's progress in learning a given skill may be conveniently portrayed by charting a learning curve. A learning curve is a graphic representation of a person's improvement (or lack of improvement) in a given activity. A quantitative record of the individual's performance is taken at stated intervals during the course of a learning activity, and the results are plotted on a two-axis chart.

The shape that the learning curve will take depends on the units that are chosen to depict the course of learning. In the learning of typewriting, for example, if improvement is measured in terms of number of strokes per unit of time, the curve will tend to rise with successive practice periods. On the other hand, if improvement is measured in terms of time needed to complete a given unit of work, the curve will tend to descend with successive periods of practice (see Figure 11).

THE INITIAL SPURT

For most learning activities, the early stages of learning are characteristically very rapid. When plotted, the learning curve will therefore show a sharp initial rise. In general, this initial spurt is due to such factors as: (1) high motivation; (2) ease of beginning material to which the learner is introduced; (3) utilization of previous learnings in the new situation; and (4) the cumulative effect of early learning.

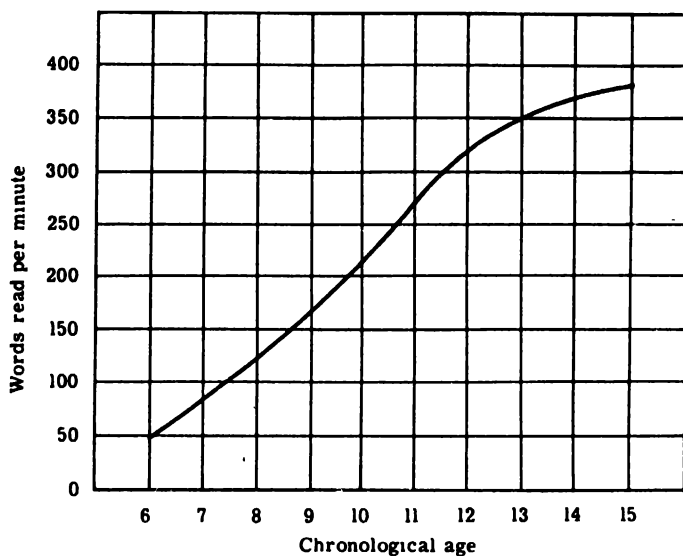


Fig. 11a. Increase in speed of reading from age 6 to age 15.

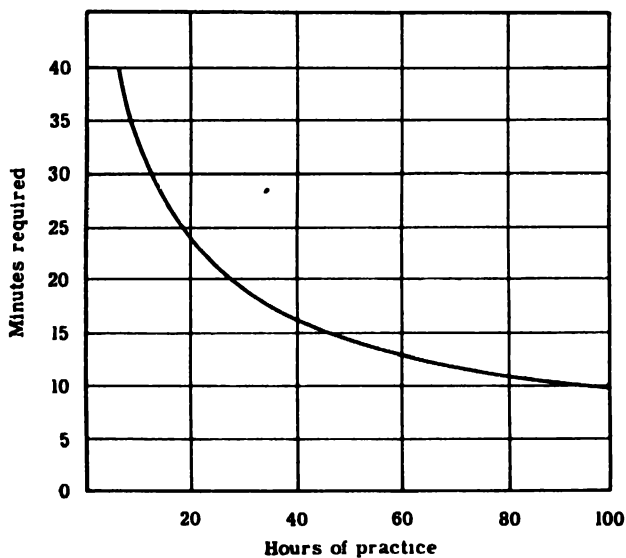


Fig. 11b. Improvement in learning when measured in terms of time needed to complete a given unit of work.

Sometimes, however, the initial stages of learning are relatively slow, and the learning curve will show a long initial period in which gains are slight. A typical curve in which this type of initial progress is noted is that for the learning of vocabulary. The average child shows a gain of only 19 words between the ages of 12 and 18 months as contrasted with a gain of 250 words during the next six months. Curves showing such slow progress at the start are generally noted when the learning of young children is studied. They also appear in instances when an exceedingly complex task is being learned and in learning situations in which the beginning material being presented to the learner shows poor gradation from simple to complex.

SHORT-TIME FLUCTUATIONS

The course of learning in any activity is far from smooth. Rather, it is characterized by daily ups and downs, even though the individual's general progress is in a positive direction. These short-time fluctuations may be caused by a wide variety of factors—fluctuations in attention due to temporary distractions, a headache, variation in the amount of effort which is expended on the task in hand, temporary carelessness, overconfidence, a late date the night before. We all have our good days and our bad days; we all show better or poorer performance from time to time.

PLATEAUS

Very often, in plotting a learning curve, a relatively level stretch, extending over a number of trials, will appear. These horizontal stretches, indicative of no apparent progress, are called plateaus. There are many possible causes of plateaus: (1) the persistence of a bad habit, such as vocalizing in silent reading or counting on one's fingers in arithmetic computation; (2) practice under poor conditions; (3) improper gradation of difficulty of material, forcing the learner to cover too great a gap; (4) stress upon some of the elements of a complex task to the neglect of others; and (5) emphasis upon speed rather than accuracy, or vice versa.

To some psychologists, the plateau has represented a necessary period of "integration of higher order habits." Early experimenters, using the sending and receiving of telegraphic symbols as the learning activity, found that plateaus arose as the learner passed from the sending and receiving of individual letters to sending and receiving

words, and again when learning to send and receive entire phrases and sentences. They suggested that the plateau constituted a period during which the lower order of habits were being consolidated. Other research workers maintain, however, that plateaus of this type are not inevitable, and can be avoided if learning is properly directed to attack upon the total task rather than to the elementary units that comprise the task.

It must be emphasized that loss of interest or lack of motivation should not be looked upon as the sole cause of plateaus. While it is true that the appearances of a plateau may be concomitant with loss of interest, it is much more sound to look upon the loss of interest as a symptom rather than a cause of the apparent lack of progress. Lack of progress inevitably leads to decreased interest, to wandering attention, to lowered expenditure of effort, and thus to still less progress.

The teacher must be alert to examine the reasons for his pupils' failure to show progress after an initially successful introduction to a learning activity. Is the material which is being presented poorly graded in terms of difficulty? Has the pupil continued to use an inefficient method of attack? Has he failed to eliminate a bad habit? Has the teacher provided for sufficient practice, adequately spaced?

LIMITS OF IMPROVEMENT

Most psychologists agree that the individual, if he practices long enough, will reach the limit of his ability to improve. Since man is a physical mechanism, it is easy to conceive of a *physiological limit* beyond which further improvement is impossible. Few of us even approach at all closely the limit of our ability in the activities in which we engage. Rather, most of us function at a *practical limit*. We generally put forth only enough effort to meet the normal demands which are placed upon us, enough to get by. Of course, this level is much below that which we are capable of reaching. When additional incentives enter into the picture, in the form of a bonus for added work, a higher grade for a college course, a promotion to a position paying a higher salary, recognition by a social group of which we are a member, or praise by a respected adult, most of us can put forth the additional effort needed to function on what is known as the *motivational limit*. In the school situation, the teacher

is charged with the responsibility of providing the incentives which will motivate the pupil to respond on the motivational, rather than the practical level.

Summary

In perceptual-motor learning, perceptual stimuli initiate motor responses. Both maturation and training enter into the development of perceptual-motor responses. Early perceptual-motor processes develop at roughly the same time and in roughly the same sequence in most children (maturation). However, young children generally profit from special training in perceptual-motor skills, provided it is given at the correct stage in the child's maturational development. Several levels of perceptual-motor learning may be distinguished: (1) activities in which both perceptual and motor factors are relatively simple; (2) activities in which the perceptual factor is relatively simple, but the motor response relatively difficult; (3) activities in which the motor response is relatively simple, and the perceptual factor creates the difficulty; and (4) activities in which both the perceptual and motor phases are relatively difficult. Perceptual-motor activities also differ in character: (1) the learner may be called upon to develop a perceptual-motor skill which is almost entirely new; (2) the learner may be called upon to integrate motor skills already established with new perceptual stimuli; and (3) the learner may be called upon to develop dexterity and accuracy.

In guiding the acquisition of perceptual-motor skills, the teacher must be very aware of individual differences in his pupils, and of the importance of motivation in insuring the development of adequate learning. Practice is essential for the mastery of perceptual-motor skills. Research in the field has indicated that, to be effective, practice must be relatively short, adequately spaced, and should take place in context. Mental practice is of value. Rhythm plays a part in the development of a perceptual-motor skill, but the rhythmic pattern which is developed must rest with the pupil. Demonstration by the teacher of the correct approach is an important technique for improving perceptual-motor skills.

The development of skill may be charted in the form of a learning curve. Such curves are characterized by initial spurts, short-time fluctuations, and plateaus. Limits of improvement in learning have been

identified—a practical limit, a motivational limit, and a physiological limit.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Define “maturation” and “learning.” To what extent is it possible to identify and to separate the contributions of maturation and learning in the development of a child?
- 2 • How can a teacher tell that the child has reached that stage in his growth process where he is ready to learn to read?
- 3 • Cite several examples of activities in which there is a combination of:
 - a. a simple perceptual factor and a simple motor response
 - b. a simple perceptual factor and a complex motor response
 - c. a difficult perceptual factor and a simple motor response
 - d. a difficult perceptual factor and a complex motor response
- 4 • Cite several examples of instances in which a pupil is called upon to:
 - a. develop a relatively new perceptual-motor skill
 - b. integrate motor skills already established with new perceptual stimuli
 - c. develop accuracy, dexterity, and speed
- 5 • How should a teacher take individual differences in skill in consideration when he is teaching his pupils to play basketball?
- 6 • What factors might account for a pupil's statement that he does not like to play baseball? How could a teacher go about changing his attitude?
- 7 • What should a parent do when Jane skimps practicing her piano lesson?
- 8 • Assume that you wish to give a typing class practice in setting up statistical tables. How would you space your practice periods?
- 9 • If you were teaching someone the following activities, what proportion of your practice time will be given to practice in context? to isolated practice?
 - a. shooting “lay-ups”
 - b. catching a lacrosse ball
 - c. operating a calculator
 - d. operating a mimeograph machine
 - e. driving a golf ball
 - f. shifting a car's gears
 - g. preparing pancake batter

- h. threading a pipe
 - i. sewing a French seam
 - j. leaving the mark in a race
- 10 • Devise a simple learning experience which you can use as a basis for drawing a learning curve.
 - 11 • What should the teacher do when his pupils seem to be on a plateau?
 - 12 • How can the teacher deal with the pupil who is worried about his daily ups-and-downs in learning?
 - 13 • What can the teacher do when his pupils seem to be operating at the practical limit of their ability?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Carmichael, Leonard (ed.), *Manual of Child Psychology*. New York: John Wiley and Sons, 1946, Chapters 7 and 8.
- Davies, Dorothy R., "The Effect of Tuition on the Process of Learning a Complex Motor Skill," *Journal of Educational Psychology*, 36 (1945), pp. 352-65.
- Harmon, John M., and Arthur G. Miller, "Time Patterns in Motor Learning," *Research Quarterly, American Association for Health, Physical Education, and Recreation*, 21 (1950), pp. 182-86.
- Holodnak, Helen B., "The Effect of Positive and Negative Guidance upon Maze Learning in Children," *Journal of Educational Psychology*, 34 (1943), pp. 341-54.
- Kingsley, Howard L., *The Nature and Conditions of Learning*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1946, Chapters 3, 9, and 11.
- National Society for the Study of Education, *Forty-first Yearbook, Part II: The Psychology of Learning* (1942), Chapter 10.
- National Society for the Study of Education, *Forty-ninth Yearbook, Part I: Learning and Instruction* (1950), Chapter 3.
- Skinner, Charles E. (ed.), *Educational Psychology*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951, Chapter 10.
- Vandell, R. A., R. A. Davis, and H. A. Clugston, "The Function of Mental Practice in the Acquisition of Motor Skills," *Journal of General Psychology*, 29 (1943), pp. 243-50.

10

ASSOCIATIONAL LEARNING

Associational learning begins at birth and extends through life. It occurs at school, at home, at work, and in the community. Broadly defined, association is the process of relating experiences to each other and using these relationships in present and future conduct. It has aided man to progress from a primitive caveman type of life to modern civilization.

Experiences, both real and vicarious, become more meaningful as they are related to previous experiences of the learner. Present experiences recall, through the process of association, other experiences; hence, the present experiences take on a new meaning. Although association may not result in a good memory, memory is an essential part of associational learning. This is true because memory is the process of strengthening or reinforcing associations. Associational learning may be the deliberate recall or recognition of past experiences, as well as the behavior called "automatic association," which is caused by many repeated associations, as in learning addition and multiplication facts in arithmetic or memorizing a poem.

ASSOCIATIONAL LEARNING IS IMPORTANT

Associational learning is important to the child in first grade who associates the symbol "man" with one or more adult males. It is important to the high school pupil who associates the chemical formula " H_2O " with water. It is important to the citizen who understands that erosion of the soil depletes the natural resources of the nation. These kinds of learning begin with the preschool life of the child and continue through life.

ASSOCIATED LEARNING

Investigations by MacLatchy¹ and Woody² provide an indication of the average pupil's preschool knowledge of counting, measuring, and number processes. Before formal school instruction in arithmetic is begun, many pupils have attained considerable ability in counting, reading simple numbers, telling time, knowing common units of measurement, and dealing with simple exercises in addition and sub-



An example of learning in which the pupil learns to associate things that belong together. (Board of Education City of New York.)

traction. In adult life, for example, parents learn through experience that children in the family compete for attention and affection. These simple instances illustrate clearly that associational learning is a continuous process throughout life.

CLASSES OF ASSOCIATIONAL LEARNING

For convenience in discussion, associational learning may be classified into such categories as automatic association, concepts, and gen-

¹ MacLatchy, J. H., "Number Abilities of First Grade Children," *Childhood Education*, Vol. XI (1935), pp. 344-47.

² Woody, C., "The Arithmetical Backgrounds of Young Children," *Journal of Educational Research*, Vol. XXX (1937), pp. 188-201.

eralizations. Actually, such categories overlap, and the dividing lines are indefinite and hazy. All are predominantly verbal and symbolic in character. They tend to follow the sequence from facts to concepts to generalizations. Facts are often regarded as automatic associations—"bird" means an animal that has wings and generally flies from one place to another; two 4's are 8, whether added or multiplied; or "frater" means brother in Latin. However, before these associations are learned so that they are automatic, the individual must have some direct or indirect experience with birds, with the concept of 4-ness, or with the concept of brother. Otherwise, only rote and meaningless memory will result in learning.

Automatic associations are the facts and information to be learned, preferably after their meanings are clear. In reading, the meanings of such words as book, water, travel, and receive must be automatic in their association for effective learning. In mathematics, the response to $2 + 2 = 4$ or $4 \times 8 = 32$ must be automatic for effective learning. In social studies, science, and other subjects of study, the vocabulary and basic formula must be memorized, or automatic, for rapid and efficient learning.

Concepts are more complex than the automatic associations. They require a higher degree of mental organization for the understanding. The school curriculum, for example, involves an understanding of such concepts as community, state, and legislator in social studies; of magnet, element, and compound in science; of balance, rhythm, and perspective in art; of scale, pitch, and melody in music; and of fraction, ratio, and equation in mathematics. These concepts are illustrative only; it is impossible to teach all concepts in all subjects in school.

To illustrate briefly, let us examine some aspects of the concept of

CHART 2. Some aspects of the concept "friendship"

Literal Meaning

Friendship—a
friendly relation-
ship

Connotations

Good will
Happiness
Understanding
Sympathy
Kindness
Consideration
Trust
Faith

Application

Classmate
Neighbor
Group Member
Teacher
Employer

friendship. Friendship means literally a friendly relationship. As a concept, it connotes good will, kindness, consideration, trust, faith, and understanding. It may be applied to a classmate, neighbor, group member, teacher, or employer. Concepts have such dimensions or lines of development as literal meaning, connotation or implications, and relationships and applications.

Generalizations are formulations of relationships which have wide applicability. In a sense, they comprise an understanding of principles, rules, or laws. A generalization involves a statement of relationships between two or more concepts. A few illustrative generalizations are:

- a. Institutions and patterns tend to remain fixed as the conditions which created them change.
- b. Characteristics of the physical environment affect the types of animal and plant life that can exist therein.
- c. Multiplication can be regarded as repeated addition of the same number.

In order to understand generalization *a* above, the individual must know with some degree of clarity the meanings associated with such concepts as "institutions," "patterns," and "conditions." In a like manner the basic concepts in generalizations *b* and *c* must have acquired meanings for the learner. Otherwise, the generalization will be relatively meaningless, even though the learner can recite its words perfectly.

Development of Associational Abilities

In school, as well as in life, associational learning is mainly verbal, abstract, and symbolic. Words or numbers or graphs are symbols of such tangible things as rivers, mountains, trains, fields of grain, automobiles, and other natural or man-made objects or phenomena. These symbols must be invested with meaning either through direct or vicarious experiences by the learner. The learner with his abilities and characteristics is central in the learning process.

THE LEARNER'S PATTERN OF GROWTH

Children and adults are complex human beings with unique as well as common characteristics. Heredity and environment serve to increase the individuality of the person in all aspects of growth and development. Among children, particularly, rates and patterns of

growth vary widely in associational learning as well as in physical, social, and emotional characteristics. Since psychology and education have found no ways to slow down or speed up the growth rate, the curriculum should be adapted to the child.

Despite individual variations, the generalized curve of associational learning shows a trend as follows: The initial progress is slow, but later progress is made at a more rapid rate. As the limits of the learner's ability are reached, the curve tends to flatten out. Because of its

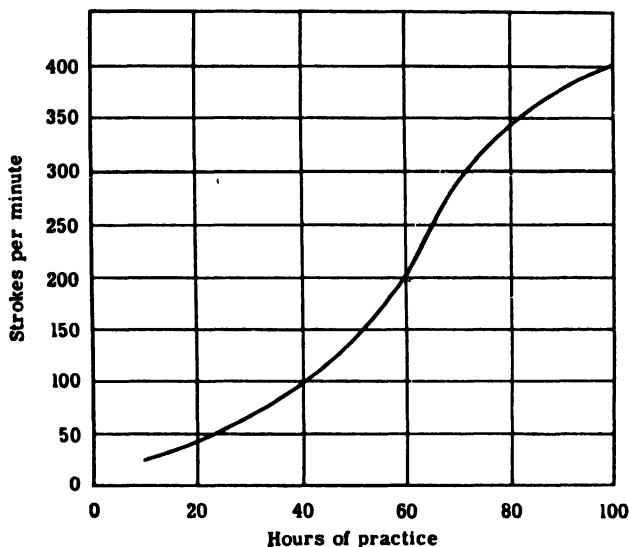


Fig. 12. The S-shaped curve.

pattern, it is sometimes called the S-shaped curve. For the individual, the learning curve may show occasionally a plateau, or flat place, where learning is proceeding very slowly. Then the learning rate will speed up to its normal pattern again.

The child grows, also, as an integrated, or whole, individual. Only for convenience in discussion are physical, social, emotional, and mental development mentioned separately. Actually, all these factors are interrelated. The child's physical growth is related to his emotional, social, and mental development. If he is tense, fearful, and overexcited for a long period, his physical functioning will be affected. Under these same conditions his mental functioning will be affected. In associational learning, therefore, it is not sufficient to consider

mental ability in isolation from the other characteristics of the learner. He actually learns with his whole being.

ROLE OF MATURATION

Some parents and teachers attempt to "force" levels of learning before a child is ready—physically, mentally, emotionally, or socially—for such learning. Children vary in the rate of growth and the chronological age when they have attained maturity for successful achievement of defined levels of associational learning. Attempts to speed up the maturation, or rate and level of growth, for a child are doomed to failure. Forcing a child to read standard textbooks or master number concepts before he has reached an adequate maturation level will result in frustration for both the child and the teacher. The role of maturation in associational learning may be illustrated by studies of readiness for reading and arithmetic.

Reading readiness. The importance of providing an adequate background of experience and concepts for young children before they are asked to read more or less formally from textbooks has been emphasized in recent years. The use of trips, visual materials, and experience reading charts are some of the techniques employed to build a background of meaning for concepts and words in reading. The factors that influence reading readiness have been studied carefully, especially by Harrison.³ The findings indicate that of major importance among all factors are: (a) adequate mental age or maturity; (b) adequate visual powers and habits; (c) good hearing; (d) emotional adjustment; (e) adjustment to the school situation; (f) desire to read; and (g) specific skills in the reading process, such as the possession of a range of concepts, ability to follow directions, visual discrimination, auditory discrimination, and comprehension of a short, simple story.

Arithmetic readiness. Washburne⁴ and the Committee of Seven have carried on extensive studies to determine whether or not there are minimum mental-age or readiness levels at which it is most efficient for the child to learn various arithmetic processes. On the

³ Harrison, M. Lucile, *Reading Readiness* (Boston: Houghton Mifflin Co., 1936).

⁴ Washburne, Carleton, "Grade-Placement of Arithmetic Topics," *Twenty-Ninth Yearbook of the National Society for the Study of Education* (1930), pp. 641-70.

basis of five years of investigation, the committee concluded that there are stages in a child's mental growth before which it is generally ineffective to teach various arithmetic processes. They recommend, for example, that the easier addition facts should not be taught until a child has reached a mental age of 6 years, 5 months. At the other end of the scale, they have indicated that effective mastery of de-



Story telling can help provide a useful background preparatory to learning to read. (Board of Education City of New York.)

nominate numbers should not be attempted until a child has reached a mental age of 14 years. These studies have been criticized and defended, but certainly they provide some guidance to teachers regarding the adaptation of arithmetic to the different mental abilities of pupils.

Guiding Associational Learning

As the teacher considers how best to guide the learning of pupils, the factors of motivation, concomitant learnings, practice or maintenance, and part-versus-whole learning require attention. With some

modifications, these factors apply to learning of information, concepts, and generalizations.

MOTIVATION

All learning may be influenced by intrinsic and extrinsic motivation. Intrinsic motivation can establish within the individual a recognition of need that will develop into an interest or a drive by which the individual voluntarily learns. Adroit teachers can stimulate such interests and drives by many devices, principally by setting up situations that lead pupils to suggest the desirability of achieving certain goals.

Extrinsic motivation, however, uses various devices, some of which are on the borderline of intrinsic motivation. Praise and blame, for example, are effective when they come from persons whom the learner respects. Although many investigations indicate that praise is the most effective of incentives tested, other studies may be cited to show that it is not always effective for some pupils. Another device used is rivalry, especially between groups, and self-rivalry, or competition with one's past record. Self-rivalry may be illustrated by use of graphs of progress of results on objective standardized tests. Closely associated with the methods of praise and blame are rewards and punishments. Generally speaking, if punishment is inflicted when the reason is not clear or acknowledged, it may breed antagonism and a desire to avoid the form of learning with which it may be associated. Rewards in the form of money are rarely desirable forms of motivation. Rewards of an intangible sort related to satisfaction or esteem are most desirable. All of these various sources of motivation rest upon the wish of individuals for social approval, for mastery or dominance, for personal satisfaction, or for giving pleasure to another individual.

CONCOMITANT LEARNINGS

For convenience we may make a distinction between primary and concomitant learnings. Primary learnings are the more definite and tangible outcomes of any particular learning experience. Thus, the process of learning the multiplication combinations may be directed toward the objective of gaining skill in multiplying effectively in a problem of mathematics. During such a learning experience the pupil will have concomitant learnings, such as accuracy in technique, self-

reliance, attitudes toward the teacher, and attitudes toward himself and his associates. These concomitant learnings involve attitudes, appreciations, and general emotional tones usually associated with personality. It is important to recognize that the teacher may influence the pupil not only in his primary learnings but also in his so-called concomitant learnings.

PRACTICE OR MAINTENANCE

It is important to consider forgetting as well as remembering. These are not necessarily opposites. What is retained, recalled, or recognized from the past is rarely, if ever, a duplicate of a previous experience. As a matter of fact, it can easily be demonstrated that several persons who observe a very objective demonstration will vary in their memory of even the essential facts, objects, or persons involved in the demonstration. The degree of accuracy varies with each person. Everyone tends to fill in the gaps with inferences that seem reasonable, that is, with experiences or events that such gaps might possibly have included or what he should like to have them include. This means that our memory of the past is a personal version, and one that usually contains some unconscious and inevitable inaccuracies or amendments to the actual facts.

Although some practice or review of associations is desirable to maintain acquired concepts and generalizations, practice or drill is essential for establishing automatic associations of basic information and facts. After the meaning and understanding of the fact as a symbol of some real thing or process is provided, rote memorization fixes the association automatically.

PART- VERSUS WHOLE-LEARNING

Psychologists tell us that the "whole" method is generally better than the "part" method of learning. It is better to read the whole paragraph about the surrender of Cornwallis at Yorktown before concentrating on associations of specific names and dates mentioned. It is better to memorize a whole poem or stanza than to master one or even two lines at a time.

The "whole" method helps the learner to get a broad outline of meaning and to see relationships in the material he is learning. The "part" method sometimes makes nonsense material out of what is really meaningful material. A large thought unit is easier to remem-

ber than a number of small, isolated units. It is easier, for example, to remember a sentence than a list of fifteen words.

In "part" learning we tend to overlearn the first part of a poem or a musical selection on a piano because we practice these more intensively. We tend to underlearn the last parts because we practice these less intensively. Learning by the "whole" method distributes the practice equally in all parts.

Learning Information

Basic information or facts constitute a foundation for associational learning. They are referred to in this discussion as automatic associations because the learner should know their meaning instantly in order to use them for learning the more complex concepts and generalizations. Automatic associations are required at all ages and levels of learning. In the primary grades, for example, the child learns the meanings of such simple words as man, bird, car, run, give, and hold. At higher grade levels, he learns the meanings of such words as chromium, phenomenon, decrease, and prevent. The young child learns the meaning of the symbols plus, minus, times, and equal, as well as addition, subtraction, multiplication, and division facts. In the higher grades he learns in mathematics the meaning of such symbols as pi, r , and angle, as well as formulas for area and volume. For effective use in learning, the association of a word or symbol with its literal meaning should be automatic.

BUILDING MEANING FOR FACTS

Facts or information should be invested with meaning before the process of making the association automatic through practice is undertaken. When possible, direct experience with some real thing or process which the symbol—word, number, formula—represents is desirable. When this is not possible, vicarious experiences should be used to the extent that this is feasible. A young child who has had direct experience with a cat, dog, cow, or horse will have a better understanding of the literal meaning of the words "cat," "dog," "cow," and "horse" than a child without such experience. A high school student will associate H_2O and water better than barium sulfate and $BaSO_4$ because he has more direct experience with water.

Some children tend to memorize in a rote fashion not only basic facts and information, but also learning tasks that may be rich in

relationships and meaning. All children must memorize at times, but some children organize their learning tasks more meaningfully than others. Stroud⁵ says that material high in associative value is easier



Class instruction can be made effective and economical in the acquisition of information. (Board of Education City of New York.)

to learn and more easily recalled or relearned. Logical material with organization or system facilitates transfer of training as well as initial learning.

PROCESS OF MASTERY

In the curriculum today, certain facts and information are educational imperatives. They must be learned to the point of automatic association. After motivation, background, and meaning are supplied through direct or vicarious experiences, repetitive practice is neces-

⁵ Stroud, J. B., *Psychology in Education* (New York: Longmans, Green and Company, 1946), p. 538.

sary. The amount of practice or drill will vary among individuals. Many children work out their own systems of organization and find their own aids to the learning process.

The teacher can help in this stage of the process of mastery by detecting and correcting errors and by a reasonable maintenance program. The teacher should correct errors in simple associative learning immediately. Prompt correction avoids the fixation of errors. The maintenance program should recognize that typically there are large drops in retention after practice ceases. This can be prevented by having the pupils "over-learn" the associations. Practice should extend far beyond the requirements of the immediate situation. The associations should be applied as often as possible in new tasks or situations.

GREATER ACCURACY AS A MARK OF LEARNING

The student who is learning a foreign language makes many errors in his first attempts to translate. As he continues to learn, the errors become fewer and fewer. This increase in accuracy or correct performance is a mark of learning. The same mark of learning applies to progress in mathematics, science, history, music, home economics, and other subjects.

GREATER SPEED AS A MARK OF LEARNING

As the errors are reduced, the student takes less time to perform a task. As he reduces his errors or faults in reading or calculating numbers, he approaches his maximum speed in reading and working with numbers. Apply this same idea to history, science, or learning a foreign language.

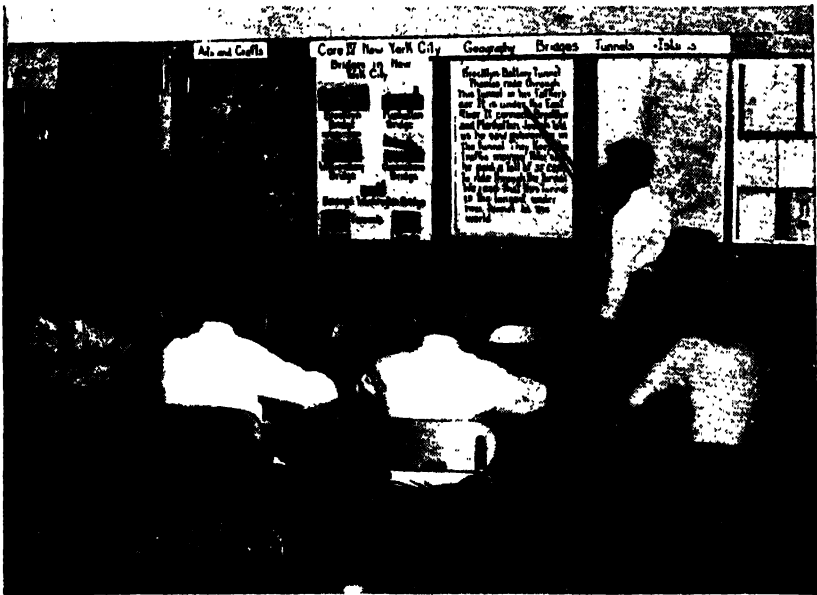
LESS EFFORT AS A MARK OF LEARNING

When a student learns a new fact or skill, each detail of the act requires conscious, almost painful, effort. As learning progresses, the amount of conscious effort is reduced. The student translates foreign language with more ease or reads the chemistry book with fewer references to the glossary of chemical terms.

Learning Concepts

Concepts are complex ideas. They comprise multiple meanings which must be associated and integrated into generalized wholes. The number of concepts that might be taught, even in a single sub-

ject such as social studies, is staggering. It is impossible to teach adequately all of the possible concepts. Fortunately, many concepts can be learned outside the classroom and the school. Moreover, the school can select and emphasize the concepts most essential to its curriculum. Since the nature of learning concepts borders on problem solving, teachers may be able to guide the pupil progressively



Learning of geography concepts can be interesting. (Board of Education City of New York.)

toward independent study activities in organizing and reorganizing his learning of concepts. Thus the pupil may learn many by self-study as the need arises.

CONCEPTS GROW FROM EXPERIENCES

Concepts are the means by which we interpret present experiences in the light of past experiences. They represent the generalized meanings that we have acquired from our experiences, and are the bases for our interpretation of present events or situations. Each individual manages a situation according to the meanings that he has previously acquired. It is important, then, that children acquire the basic con-

cepts in the school curriculum. If the background and experience are meager, and if concepts are poorly developed, the individuals cannot comprehend effectively the materials in the average curriculum. Gray and Holmes⁶ have summarized many studies related to growth in word meaning and concepts. The essence of their conclusions is that meanings are generally achieved slowly, and that individuals differ widely in the rate of acquiring meanings. Many individuals have inadequate or incorrect meanings of words and concepts, which tend to persist. Between the ages of nine and fifteen, the number and varieties of meanings acquired are most extensive for the average person. The development of clear and accurate meanings is assumed to be the responsibility of all teachers of the individual in such subjects as the social studies, health, and science, as well as in the language arts. The teachers must be alert not only to develop accurate meanings of new words and terms, but also to correct previous misconceptions.

DEVELOPING CONCEPTS

An objective commonly emphasized in the schools is the acquisition of basic concepts and related information. The learning process involves not only the building of new concepts, but also the reconstruction of the ideas already held. Children in the first three grades, especially, although they have acquired a considerable number of accurate concepts, have, also, many misconceptions. It has been demonstrated that children in the intermediate grades and high school and even college students have serious misconceptions of basic concepts.

Teachers cannot reason that, because pupils use certain terms, they understand them, for it has been found that children frequently use terms the meanings of which they only vaguely or inaccurately conceive. Meltzer⁷ found that the concepts, or meanings, for the term *socialism* ranged from: "does lots of social duties," "goes to parties," "has to do with government," "is for working class," to such meanings as: "wants equal rights for workers; no rich classes," "want all

⁶ Gray, William S., and Eleanor Holmes, *The Development of Meaning Vocabularies in Reading: An Experimental Study*, Publications of the Laboratory Schools of the University of Chicago, No. 6 (1938).

⁷ Meltzer, Hyman, *Children's Social Concepts: A Study of Their Nature and Development*, Contributions to Education, No. 192 (New York: Teachers College, Columbia University, 1925).

to have an equal share of money, queer, usually foreigner," "want government control of fundamental industries and a more equal distribution of wealth." ⁸

It would be a serious error, therefore, to assume at any time that a pupil's concepts are complete and accurate. The true status of the concepts of a child must be ascertained and dealt with fittingly if his optimum growth is to be assured. Continual, careful, and appropriate enrichment of the experiential background is the only guarantee of growth and development.

The general period of ages nine to fifteen is particularly productive for the acquisition of meanings. As experience accumulates, language develops, and mental age increases, the number and richness of concepts increase correspondingly. In reality, throughout adolescence there is a continuous increase of insight, imagination, concentration, problem-solving behavior, and related mental activities, all of which improve the ability to acquire and enrich concepts.

The significant generalizations justified by the research in this aspect of child growth may, then, be summarized as follows: (1) the learning process involves both the construction of new concepts and the reconstruction of those already held; (2) concepts vary in difficulty, and so must be adapted, in the learning process, to the maturity of the child; (3) the general period of ages nine to fifteen is particularly productive for the acquisition of meanings; and (4) throughout adolescence the ability to acquire and enrich concepts is continuously developing.

GUIDES FOR TEACHING CONCEPTS

The suggestions offered earlier in this chapter for guiding associational learning may be applied to the teaching of concepts. Motivation should be intrinsic and so should be the rewards; extrinsic motivation and rewards should be minimized. Concomitant learnings play a larger role in concept learning than in automatic association learning. Practice or maintenance of concepts differs in kind and degree from the "over-learning" of automatic associations. Systematic and functional use and review of the concepts should be provided by applying them in new situations or contexts where the meanings will be expanded and clarified. The "whole" versus the "part" method of learning concepts will stress the "whole."

⁸ *Ibid.*, p. 21.

Learning Theories

Various theories of learning have been formulated by such psychologists as Guthrie, Hull, Tolman, Thorndike, and Lewin. In the Forty-First Yearbook of the National Society for the Study of Education, T. R. McConnell⁹ has discussed a synthesis or reconciliation of learning theories. These theories are variously known as "Gestalt," "connectionism," "field," and other designations. Most of these theories of learning have areas of agreement about central concepts of the learning process. In his synthesis, McConnell points out a number of similarities which will be reviewed briefly.

Agreements of Learning Theories

Although differences of emphasis and degree are found among theories of learning, many common areas of agreement about principles of learning can be found. Certain phases of the learning process, such as goal-behavior, have different systematic significance from one theory to another. In practice, however, they point to approximately the same consequences in learning.

1. *Theories agree that both the situation and response are complex and patterned phenomena.* Gestalt psychology, which has been constructed to a very great extent upon experiments in sensory perception, has made a point of the fact that the stimulus field to which the organism responds is always structured. In other words, the response is not to isolated items, but to a pattern of a situation. Guthrie indicates that a stimulus pattern that is acting at the time of a response will, if it recurs, tend to produce a similar response. These statements of the interdependence of aspects of total situations and responses make it evident that contemporary schools of psychology agree that the behavioral environment, or stimuli, are complex and structured and that the learner's responses are characteristically complex and patterned.

2. *Theories agree that descriptions and interpretations of learning, as of all aspects of behavior, must be made in terms of mutual relationships among events rather than in terms of independent proper-*

⁹ McConnell, T. R., "Reconciliation of Learning Theories," *The Psychology of Learning*, Forty-First Yearbook of the National Society for the Study of Education, Part II (Bloomington, Ill.: Public School Publishing Co., 1942), pp. 243-86.

ties or actions of the parts. This principle indicates that, to describe accurately what an individual does, it is necessary to know the relationship to the concrete situation in which he acts. This is an extension of the concept of organization and complexity in situations and responses, discussed above. The essential idea of the mutual interaction of observable features and the organismal-environmental field is implicit or explicit in all theories of learning. Research evidence shows that it is possible to condition a learner to make a different response to a patterned stimulus contrasted with responses to isolated stimuli to parts of the pattern. The important thing is that one pattern of stimuli may be differentiated from another, and the parts do not serve to stimulate the same responses for the whole as they serve to stimulate for component parts of the whole. Field theories of learning give unusual prominence to the organized whole. The objectives, or forces, within the field do not act independently or successively, but in correlated fashion. They go into action together in a way determined by the interaction of their own natures with the organizing relations of the field as a whole. The reactions to the whole may be different from the sum of its parts.

3. *Theories agree that the organism must be motivated to learning.* Motivating conditions initiate and stimulate activity. They direct the organism's behavior and dispose it to select some responses and to disregard and eliminate others. Different theories extend this concept in different ways. Guthrie says that motives are stimuli and that reactions are evoked by such stimuli. Hull bases his conception of motivation upon the occurrence of needs of the learner. Thorndike explains motivation by exploring the action of mental sets and readinesses as related to the law of effect. Thorndike outlines three broad functions of motives: inner attitudes; wants to satisfy a need; and the immediate effect of motivating conditions to evoke variable behavior until some response satisfies the want. The nature of the goal is sometimes related to tension; thus, the goal, or motivation factor, has been defined as that object or situation which relieves the most tension or achieves the best balance of tensions.

4. *Theories agree that responses during the learning process are modified by their consequences.* Thorndike has probably done more research on the influence of the after-effects, or consequences, on responses than any other psychologist. He has insisted that the effects of responses are decisive factors. The law of effect has been widely

interpreted in affective or emotional terms, such as feeling tone. A summary of the synthesis of theories is that responses are associated with a situation if they serve to terminate a need or satisfy a motive in the situation. This may happen on the biological or the cognitive level. In the latter, the individual learns those academic responses which are relevant to his goals and purposes which he perceives to be the means to the desired end.

5. *Theories agree that motivation is the direction and regulation toward a goal.* Learning behavior is selective, and it is directional. It is organized so as to attain some end or condition. Whether what is subsumed under the concept of goal behavior in the several theories of learning is called a persistent problem, an anticipation, a mental set, a purpose, or a goal, the relationship of motivation to effective learning is clear. The most important step in guiding learning is to establish the goal, or felt need. What is learned is meaningful when it is used to bring about consequences that realize the goal.

6. *Theories agree that trial-and-error behavior might be appropriately described as a process of approximation and correction.* Agreement among the authors of the various theories indicates that the responses of a learner in a new situation are never completely random. Although the behavior is variable, it is not a matter of chance. Motivation of the learner, his perception of the situation and other factors combine to direct and limit the range of trial-and-error responses. Learning has been described as a closer and closer approximation to successful performances. The crux of the learning process is to measure each attempt at performance against a standard, and to adapt the next trial in the light of this performance to past experience. Sudden insight, either immediate or delayed, may not occur in very difficult problems. The attainment of partial insights and gradual emergence of understanding of the situation, as a whole, makes the course of learning look very much like that shown in the typical learning curves.

7. *Theories agree that learning is essentially complete when the individual has clearly perceived the essential relationships in the situation and has mastered the fundamental principle involved in a concrete problem.* The crux of the learning process may be principally that of recognizing the appropriateness of acts, or behaviors, after they occur. The fact that the learner sees more insights and under-

standings after the response does not make his behavior less wise. Such understandings are important features of meaningful learning.

8. *Theories agree that the transfer of learning from one situation to another is roughly proportional to the degree to which the situations are similar in structure or meaning.* Psychological research indicates that every response may be elicited, not just by one stimulus, but by a class of stimuli, and that every stimulus may be elicited not just by one response but by one of a class of responses. There is no real conflict between the so-called theories of transfer of identical elements in general situations and specific situations. The two ideas are essentially complementary. Generalization occurs by reacting to a principle or relationship that is common to a number of situations that differ in nonessential details. Transfer from one situation to another is roughly proportional to the degree of resemblance between situations, and such similarity most often is that of pattern rather than of specific parts.

9. *Theories agree that discrimination is an important aspect of effective learning.* The learner must be able to detect differences as well as likenesses. Likenesses in a series of like situations lead to a generalization. Discrimination is the detection of differences in a series of like situations. Generalization and discrimination, or differentiation, are correlative aspects of the learning process. The child who is learning to read uses both generalization and differentiation in recognizing various words. At the college level the process of discrimination among various concepts is much more complex.

Learning is a complex process, according to any of the theories of learning. Factors in learning are interdependent—the learner, his motives and goals, the situation, and the consequences of the learning act. Any essential phase of the learning process for a learner at a given time will affect all aspects of learning. All learning theories are in agreement upon central concepts and procedures in learning. Their systematic rationale for explaining learning processes may vary, but the practical implications for the teacher are similar.

Summary

Associational learning begins at birth and ends at the grave. Before the child enters school, he has acquired simple associational learning in numbers, words, and other symbols. As the child grows more mature, the complexity of the associational learnings tends to increase.

For discussion purposes, associational learning may be classified as automatic associations, concepts, and generalizations. Automatic associations are the simple facts of word meanings and numbers or other symbols that must be overlearned, or memorized, for automatic responses. Concepts are more complex. They require a higher degree of mental organization for their understanding. Generalizations are even more complex and comprise principles, rules, or laws. These involve understanding of relationships between two or more concepts.

Development of associational abilities requires that words, numbers, or other symbols be invested with meaning through direct or vicarious experience. Initial learning is slow, but later progress is made at a more rapid rate until the limits of the learner's ability are reached. This associational learning is closely related to the physical, social, and emotional growth of the individual. The individual must have reached a stage of development, or maturation, before the learning can be effective. This stage is called readiness.

Guiding of associational learnings means that the instructor will provide proper motivation, will consider concomitant learnings, and will plan for maintenance, or practice, to perpetuate essential learnings. In general, the "whole" method of learning is preferred to "part" method, especially for concepts and generalizations.

Learning information or facts requires that the meanings of simple words, numbers, or symbols result in automatic association. For this reason, overlearning through practice is frequently necessary. The criteria of such learning are greater accuracy, greater speed, and less effort for mastery.

Concepts are complex ideas. They grow from experience. The instructor must be alert to correct misconceptions and to encourage correct meanings of concepts. Such meanings are expanded and clarified by applying the concepts in new situations and contexts. In a like manner, generalizations are more complex than concepts. They are expanded and clarified by progressive application to new problem-solving situations or contexts. The difference between less and more mature ability to generalize is the complexity of generalizations that are made.

Various theories of learning—known as Gestalt, field, and connectionism—have been formulated. Most of these theories have areas of agreement about the central concepts of the learning process. These agreements can be listed briefly as follows: both the situation and the

response are complex and patterned; interpretations of learning must be made in terms of mutual relationships among events rather than in terms of independent properties or actions of the parts; the individual must be motivated to learn; responses during the learning process are modified by their consequences; learning behavior is selective and organized to attain some goal; trial-and-error behavior might be appropriately described as a process of approximation and correction. Learning is essentially complete when the individual has clearly perceived the relationships in the situation and has mastered the fundamental principle involved in a concrete problem. Transfer of learning from one situation to another is roughly proportional to the degree to which the situations are similar in structure or meaning. The learner must be able to detect differences as well as likenesses in situations.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Is there a best time or mental age at which one should teach certain items, topics, or skills in the various school subjects?
- 2 • Is drill in as good repute as a device of instruction as it was several decades ago?
- 3 • Explain the differences among facts, concepts, and generalizations.
- 4 • Explain the tendency in modern instruction in arithmetic to emphasize meanings in addition to certain processes that were once emphasized.
- 5 • Do the same psychological principles of learning hold for learning science generalizations as for learning in other fields?
- 6 • How are automatic associations formed in most school learning experiences?
- 7 • Explain how learning facts about a unit on transportation may utilize principles of the Gestalt psychology.
- 8 • Explain how association is a factor in memory, and also how association can be a factor in forgetting.
- 9 • How can teachers help students to form associations abundantly and effectively?
- 10 • Explain the psychological principle involved in the statement, "A kind word is better than a dozen threats."
- 11 • Describe a classroom situation in which the laws of similarity, contrast, and contiguity are illustrated.

- 12 • Describe a situation in which you illustrate primary and concomitant learnings.

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Brownell, William A., and V. M. Sims, "The Nature of Understanding," *The Measurement of Understanding*, Forty-fifth Yearbook of the National Society for the Study of Education, Part I. Chicago: Distributed by the University of Chicago Press, 1946, pp. 27-43.
- Burton, William H., *The Guidance of Learning Activities*. New York: D. Appleton-Century Co., 1944.
- Carter, Harold D., "Emotional Correlates of Errors in Learning," *Journal of Educational Psychology*, Vol. 27 (1936), pp. 55-67.
- Coffey, Hubert S., and Beth L. Wellman, "The Role of Cultural Status in Intelligence Changes of Preschool Children," *Journal of Experimental Education*, Vol. 5 (December, 1936), pp. 191-202.
- Croxton, W. C., "Pupils' Ability to Generalize," *School Science and Mathematics*, Vol. 36 (1936), pp. 627-34.
- Fields, P. E., "Studies in Concept Formation," *Comparative Psychology Monographs*, IX, No. 2 (1932).
- Graham, James L., "Learning to Generalize," *Psychological Monographs*, L, No. 225 (1938), pp. 84-115.
- Guthrie, E. R., *The Psychology of Learning*. New York: Harper & Bros., 1935.
- Kingsley, H. L., and Ralph Garry, *The Nature and Conditions of Learning*. (2nd Ed.) Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957.
- Koffka, Kurt, *Gestalt Psychology*. New York: Harcourt, Brace and Company, 1935.
- Leuba, C., "An Experimental Study of Rivalry in Young Children," *Journal of Comparative Psychology*, Vol. 16 (1933), pp. 367-78.
- McGeoch, John, *The Psychology of Human Learning*. New York: Longmans, Green, 1942.
- National Society for the Study of Education, *Child Development and the Curriculum*, Thirty-eighth Yearbook, Part I. Bloomington, Ill.: Public School Publishing Co., 1939.
- , *Learning and Instruction*, Forty-ninth Yearbook, Part I. Chicago: University of Chicago Press, 1950. Chapter 4.
- Newman, H. H., Frank N. Freeman, and K. J. Holzinger, *Twins: a Study of Heredity and Environment*. Chicago: University of Chicago Press, 1937.
- Reichard, S., M. Schneider, and D. Rappaport, "The Development of Concept Formation in Children," *American Journal of Orthopsychiatry*, XIV (1944), pp. 156-62.
- Stuart, Herman N., "A Study of Sensori-Motor and Conceptual Thinking in

Children Between the Ages of Nine and Eighteen," *Journal of Experimental Education*, Vol. 4 (December, 1937), pp. 147-53.

Thorndike, E. L., *The Fundamentals of Learning*. New York: Columbia University Press, 1932.

Wheeler, R. H., and F. T. Perkins, *Principles of Mental Development*. New York: The Thomas Y. Crowell Company, 1932.

White, M. M., "Some Factors Influencing Recall of Pleasant and Unpleasant Words," *American Journal of Psychology*, Vol. 48 (1936), pp. 134-38.

11

REFLECTIVE THINKING AND PROBLEM-SOLVING

The "Stroboscopic" Point of View¹

A stroboscope is an instrument used in the study of the successive phases of motion by means of periodically interrupted light. By means of it, the mechanical engineer is able to observe the movements in machinery far too rapid for the human eye otherwise to see. For a permanent record to use in prolonged study, he might prefer a complete series of photographs covering every phase of the particular motion being investigated. Ultrarapid motion picture cameras have been developed for such purposes, and it is now possible to obtain records of the motion of a high-velocity bullet as it leaves the barrel of a rifle. These techniques for obtaining static views of dynamic events are fairly new in the fields of engineering and physics. The "stroboscopic" point of view is a very old one in psychology; and, although it is of some help in describing the dynamics of reflective thinking and reasoning, it leads to egregious mistakes.

The principal advantage of this point of view is that from it we can analyze and describe each successive move in a complete act of reflective thinking. Imagine that we have an ultrarapid camera with which we can take a sequence of "stills" while an acquaintance solves a problem. By a careful scrutiny of each "still" picture, we might be able to select five or six that would represent significant episodes in the quest for a solution. A more thorough analysis might enable us to find illustrations of some points discussed in a conventional textbook on traditional methods of teaching boys and girls to think. At

¹ The author is indebted to the interesting discussion in Part IV of R. W. Holmes, *The Rhyme of Reason* (New York: D. Appleton-Century Company, 1939).

least, we might learn something about the structure of the thought process.

A COUPLE OF PROBLEMS FOR AN OBLIGING ACQUAINTANCE

In order to obtain the "still" pictures, suppose we commence by playing an ancient game. We must choose nine books, each of a different size. Then we designate three places on the desk A, B, and C, respectively. Now we place a large book on A, and then put a smaller one on top. Our acquaintance is told, "The object of this game is to move the books from A to C without placing the larger book on the smaller book." No doubt, he makes the appropriate moves without an error. Then we place three books on A, with the smallest on top, a larger one below, and the biggest on the bottom. The rules are the same throughout the game: a larger book must never be placed on a smaller book. Possibly, he makes one false move here, but the likelihood is that he succeeds on the first attempt. Hence we proceed with four books, then with five, and so on, one book at a time, until he has moved the nine books piled up in order of size on A to C, never placing a larger book on a smaller one.

For our second problem we might have him "work something out in his head." Suppose, therefore, we give him the "brain-teaser" about the germs which reproduce so rapidly that their number is doubled each minute. Were two of these germs placed in a bottle, by the end of an hour they and their offspring would completely fill it. Now, how long would it be before the bottle was half-full? He would be likely to reply, "Thirty minutes"; but, of course, he would be wrong. We urge him to reflect a bit, and then he gives us the correct answer, "Fifty-nine minutes."

AN ANALYSIS OF THE THOUGHT PROCESS

Our "stills" would be very numerous, since a high-speed camera can take about 4,000 in a half-second. If we were not bewildered by the mass of pictures, we might be able to locate a few important episodes. First, there is an upset in the complacency of our acquaintance; he takes a participant attitude toward the problem. Perhaps his forehead is wrinkled and his posture is intent. Second, he seems to engage in some trial-and-error behavior, as when he tries to move the nine books from A to C, or when he "talks out" his solution for the

puzzle about the microbes. Third, he may check all overt responses for a time while he "goes over the problem in his mind." At length, he "sees through" the "brain-teaser," and relaxes with a laugh.

A more formal analysis of the "stills" might enable us to classify them according to principal stages in the process. First, there is a situation for which our subject has no prepared reaction; hence he either hesitates while he surveys the difficulty, or he jumps to a conclusion. Second, we may find evidence, both in the pictures and in his subjective report, that he attempts to diagnose the difficulty. Third, he may report that he makes use of hypotheses, as in working out the rule for the book game. Fourth, he might tell us that he imagined the consequences of some of these courses of action, and then discarded all but the most appropriate one. Fifth, he seems to resolve the difficulty by overcoming it with the rule or principle that he has discovered.

A great deal of attention has been devoted to investigating the successive episodes in a complete act of reflective thinking.² No one would question the importance of learning how to think clearly or of teaching pupils how to become "cold, clear logic engines." Even a hasty survey of the beliefs and actions of our neighbors indicates that few of them are able to think clearly. They dose themselves with patent nostrums, "correct" serious eye defects by exercises prescribed by quacks, unquestioningly accept as truth whatever they read in print, and invest their life savings in "get-rich-quick" schemes. In the field of social relations and international affairs, their judgments are formed by prejudices and ignorance. Many of them are fully aware of their inability to think clearly; hence they will purchase books or attend classes purporting to "train their minds."

If it were possible to analyze each step in a complete act of problem-solving, it would be a relatively simple matter to devise techniques for teaching boys and girls to think clearly. In fact, we could introduce a course into the curriculum and entitle it "How to Think." The only difficulty is that such a course would not accomplish its objective. For many years educators firmly believed that certain stud-

² Max Wertheimer's discussion of how his friend, Dr. Albert Einstein, developed the theory of relativity is a clear, understandable illustration of the steps in logical thinking. See *Productive Thinking* (New York: Harper & Bros., 1945), Chap. VII. See also Guilford, J. P., "Some recent findings on thinking abilities and their implications," *Informational Bulletin*, USAF Air Training Command, III (Fall, 1952), pp. 48-61.

ics, like mathematics or languages, disciplined the mind and trained pupils in clear thinking. When educators finally admitted science into the curriculum, they were mollified by the idea that training in scientific procedures would contribute something to disciplining the mind. During the last few decades, millions of pupils have had courses in science and have learned the "steps in the scientific method." The outcome often has been disappointing in that the younger generation seem to be about as confused in their thinking as their elders. Huxley's dictum about making the mind a "cold, clear logic engine" is still far from realization. As a matter of fact, very few people would elect to choose such a fate either for themselves or for their children. A course in the structure of thought would be for most people a boring and useless study.

The Dynamic Point of View

Mentally alert educators have long suspected that there is something wrong with the methods used in teaching pupils to think. Many teachers resent the introduction of new courses or new methods into the school. In faculty meetings they still speak of the superiority of the "disciplinary subjects" like mathematics and languages, particularly if they happen to teach these courses. The notion of formal discipline in education is hard to scotch.

Educators, however, are becoming increasingly acquainted with the growing body of experimental literature about the thought processes of efficient adults. There seems to be little evidence to show that clear thinkers, when confronted by new problems, follow an orderly, systematic, step-by-step course in achieving a solution. As a matter of fact, the thought processes of gifted adults appear to be quite disorderly and unsystematic. None of the orderly "steps in a complete act of reflective thinking" can be found without doing violence to the facts. In the next place, educators now tend to regard the thought processes as a part of the total behavior of the individual in the changing environment. Thinking does not take place in a vacuum; it is merely an aspect or phase of the total process of adjustment to situations. Like many other activities, it is an improvable function.

The static "stroboscopic approach," therefore, is inappropriate, and it has led to unfortunate blunders in methods and in curriculum making. A "still" picture of a friend is a disappointing possession. It

may suggest a characteristic action, perhaps the photographer caught a revealing expression; but the "still" is lifeless. A whole series of pictures might be more revealing, but they cannot represent the vitality of a person. Similarly with our analytical discussion of the thought



These children are busily at work solving problems. (Board of Education City of New York.)

processes, we secure nothing but "stills" which deceive us into believing that thinking is a static matter.

AN EXAMPLE OF THE DYNAMICS OF THINKING³

Here is the sort of problem our parents encountered in their study of algebra—a fact which may explain the distaste some of them acquired for this subject:

I have 1,872 tacks, nails, and screws mixed together in a box. There are three times as many tacks as nails, and three times as many nails as screws. How many of each do I have?

³ From L. Hogben, *Mathematics for the Million* (New York: W. W. Norton & Company, 1937).

We might solve the problem by hit-or-miss methods, but that would keep us at the task for too long a time. Some people would dismiss the problem by saying, "I never could do figures!" Suppose that we accept this problem as a challenge to our wits and try to achieve a solution. It is probably as dry and as difficult for the prospective teacher as many of the problems that he may later on have to assign to his pupils. The procedure in working a solution may teach us something about the dynamics of problem-solving.

First, we shall work more efficiently if we make use of algebraic symbols—which are nothing more than a shorthand. It is clear that n (nails) equals $\frac{1}{3} t$ (tacks), and that s (screws) equals $\frac{1}{3} n$ (nails). It is also clear that t plus s plus n equals 1,872. If we do not obtain this equation, we have not read the problem carefully. It may be that we never thought of using symbols other than x and y in solving problems by algebra. In that case, we are victimized by fixed habits. Second, it is evident that the following equation can be written:

$$t + \frac{1}{3} t + \frac{1}{3} (\frac{1}{3} t) = 1,872.$$

The sense of this equation may be more difficult to grasp, but it will be apparent when the problem is reread. If it is not clear then, at any rate we have an excellent illustration of an upset in complacency. Third, it is possible to write this equation now:

$$\begin{aligned} t (1 + \frac{1}{3} + \frac{1}{9}) &= 1,872, \\ \text{or, to simplify, } \frac{13}{9} t &= 1,872; \\ \text{hence, } t \text{ (tacks)} &= 1,296. \end{aligned}$$

Since there are one-third as many nails, I have 432 nails; and since I have a third as many screws as nails, I have 144 screws. Last, we can check the accuracy of the solution by adding 1,296, 432, and 144, which total 1,872.

THE TWO ATTITUDES TOWARD PROBLEM-SOLVING⁴

Some readers perused this illustration merely because it "was included in the assignment." They took the spectator attitude, a sort of passive waiting until something should be done. The artificiality of the problem did not appeal to them any more than much of the work presented in the classroom elicits the interest of boys and girls.

⁴ Hilgard, E. R., "Can We Train Better Problem-solvers?" *Instructors Journal*, USAF Air Training Command V (Spring, 1954), pp. 15-21.

On the other hand, there is some little evidence to indicate that learning may take place even when the pupils have the spectator attitude. When the teacher demonstrates a technique, at least the procedure is likely to "turn out right," whereas if the pupils attempt a new technique, the results may be confusing. More specifically, it has been suggested by some educators that competent demonstrations for which careful preparations have been made by the teacher may help to initiate the desired train-of-thought process in pupils. Recently there has been some interesting discussion about the value of laboratory work in the elementary sciences, the objection being that correct procedures are not grasped by the pupils when only individual laboratory work is given at first.

There could be little doubt, however, that the participant attitude is the more dynamic and fruitful. The participant may blunder at first, and perhaps he may never reach a valid solution; but at least he is growing in experience as a result of his activities. He tries out various hypotheses, looks for relationships among the parts of the situation, welcomes "hunches," and even jumps to conclusions. If he has learned how to control his thought processes, he will delay making an overt response until he has weighed and considered the matter. For instance, to revert to the problem of the marvelous microbes, a common response is "a half-hour," but that answer is a snap judgment which an experienced thinker would correct in a few moments.

THE DANGERS OF OVERSYSTEMATIZATION

In "The Purloined Letter," Poe presents a clear picture of a systematic thinker. The Prefect thoroughly investigated every likely place of concealment. Describing his methods to Dupin, he said:

I took the entire building, room by room; devoting the nights of a whole week to each. We examined, first, the furniture of each apartment. We opened every possible drawer; and I presume you know that, to a properly trained police agent, such a thing as a secret drawer is impossible. . . . We have accurate rules. . . . The cushions we probed with fine long needles. From the tables we removed the tops. . . . We examined the rungs of every chair. We opened every package and parcel. We removed every carpet, and examined the boards with the microscope. . . . I am not more sure that I breathe than I am that the letter is not at the Hotel.

Dupin, not being a victim of oversystematized thinking, located the

letter in the most obvious place in the room, a rack just beneath the mantelpiece.

Efficient teachers will not try to inculcate fixed habits of thinking or routinized procedures for meeting "typical" problems. The attempt to teach fixed habits, which is the direct outcome of the fallacious and one-sided "stroboscopic" analysis of thinking, is stultifying. The pupil must be taught to integrate certain principles into his experience and to achieve a flexible mastery of them. Under routine drill in formal grammar in which little or no real thinking is required, the pupil acquires a great many fixed habits, but he seldom acquires a more effective command of his language as a result. If, however, he is to learn how to vary the awkward "high school" style of sequence (subject-verb-object) in sentences, he must acquire a "flexible" mastery of grammar. He can vary the style by opening one sentence, say, with an adverb. Once he is taught to think in terms of word relationships, he will be able to punctuate more intelligently. Likewise, he will be able to apply his grammar in thinking out the meaning of such a line as this from Browning:

Irks care the cropful bird?

The first problem here is to locate the verb, and then to add the words that have been omitted to preserve the meter. When this has been done, the line begins to take on real meaning.

Another safe rule is to disregard the old injunction about "proceeding from the simple to the complex."⁵ Of course, the curriculum must be adjusted to the maturity and the experience of the learner. It would be foolish to try to teach the calculus in the primary grades. On the other hand, there is good evidence to indicate that relatively complex material may be introduced at the outset of a course of study. In modern language study, we could do just as well if we commenced by hearing the language spoken and by recognizing the familiar English roots in many of the printed words. Instead of this meaningful approach, the traditional educator insists upon a dreary year of drill upon grammatical rules and vocabulary. He is obsessed by the dogma about proceeding from the simple to the complex. An ingenious psychologist taught some of his subjects to recognize Chi-

⁵ For a review of many important studies of concept formation, see Vinacke, W. E., *The Psychology of Thinking* (New York: McGraw-Hill Book Company, 1952).

nese characters in a series of graded difficulty; other subjects he taught to recognize complex characters at first, and then to learn simpler and simpler ones. He found that those who proceeded from the simple to the complex did not benefit, and that it was just as effective to begin with the hard characters.

Now, it would be a very thoughtless person who would not seriously question some of the statements made in the two foregoing paragraphs. First, exception was taken to the value of drill lessons as contributory to developing the ability to think. Repetition may be of inestimable value. It may afford an opportunity for the true factors in learning to become operative. It does help to consolidate the material into the experience of the learner when it is done with zeal and understanding. On the other hand, drill should be avoided whenever better methods are available. For instance, suppose that a pupil writes across. We might drill him on the correct spelling, or we could have him prefix a to the following words:

bout
cross
far
ground
new
etc.

He should tell what changes are thus effected in the words and observe that the first consonant remains unchanged. If the difficulty is that he persists in omitting the commas to set off nonrestrictive clauses, we might drill him upon the rule. A better approach would be to have him read some sentences aloud and to note the difference, if any, when a nonrestrictive element is omitted; then he should read some sentences that contain restrictive elements, and observe the alteration of meaning when they are left out. In short, drill has its place, but it is not a very effective procedure in teaching pupils how to think.

Second, the dogma about beginning with the simple and proceeding to the complex was challenged. The curriculum is still too largely based upon the "stroboscopic" analysis of the psychology of the learner. The educator who is educationally alive speaks a great deal of the experience curriculum. This is entirely at variance with an earlier type of curriculum. For instance, the efficient teacher of history may be quite willing to begin the course in his department with a

study of contemporary events. Earlier teachers often insisted upon "giving the pupils a background" first; thus, they usually commenced with ancient times, and then gradually worked down to the present. In teaching effective writing and speaking, they began with grammar and formal rhetoric and insisted upon observance of all the minutiae of "good usage." The mentally alert English teacher of today is more likely to begin by trying to arouse a felt need to write or say something worth while. It might appear logical to spend weeks in drilling on the "fundamentals" of algebra. In fact, there are enough complexities in such topics as fractional exponents and imaginary numbers to occupy a semester or two in high school. A more thought-provoking approach to algebra, however, might be to start out with the assumption that algebra is merely a form of language. On the very first day, the class might well begin by using the language of algebra to express some relatively simple problems and to solve them.

The Occasion for Thinking

We think when we are confronted by a situation for which we do not have a prepared response and which we are unwilling to meet in an impulsive way. When we first sat behind the wheel of the family car, we had a great deal to learn. There were very few prepared reactions which we could use in starting the car and shifting the gears. Perhaps our teacher pointed out the various gear positions and showed us how to shift correctly. At first, we had to move slowly, lest we confuse reverse and second. We tried to recall the diagram which we used to illustrate his instructions. With added experience, however, we acquired a complex series of prepared reactions, and then we could devote our attention to the scenery or to the actions of other drivers.

Thinking, then, involves a sort of delay in the response. During this interval the whole situation is surveyed, past experience is brought to bear upon the difficulty, and a tentative decision is made. Some logicians have defined thinking as an "as if" type of behavior. Possible courses of action are weighed and considered and then one mode of response is selected. A radio announcer speaks of the case with which anyone may borrow money "to clean up your bills or to take that restful vacation. Salaried people need no endorsers. Call at your nearest _____ Finance Office and see how easy it is to borrow three hun-

dred dollars." Here is a persuasive appeal to act on impulse, and it evidently pays large dividends to the "loan sharks." If we delay our visit until after we have analyzed the opportunity, we may decide not to go at all. The interest rate is "only" 3 per cent, but it is 3 per cent each month on the total amount borrowed. The hesitancy about visit-



An informal teaching situation can be an occasion for finding answers to questions. (Courtesy of University School, Southern Illinois University.)

ing the _____ Finance Office gave us time to do some "as if" behavior. Our calculations, done either "in our heads" or on scratch paper, show us that we would have to pay \$444 back to the company; hence we may decide to forego this opportunity.

We are all familiar with the type of behavior described by the adjectives *heedless*, *thoughtless*, and *impulsive*. In this type of action there is little or no delay, the situation is not carefully scrutinized,

and the past experience of the person is not brought to bear upon the difficulty. A sixth grade pupil, obviously a retardate, described his methods of solving problems in arithmetic as follows: "If there are lots of numbers, I add them up. If there are only two long numbers, I subtract. If there are just two numbers and one is a very small one, I divide if they come out even. If they don't come out even, I multiply." No doubt, this apocryphal story may seem too far fetched and absurd to illustrate the point. When we consider the haste with which adults respond to "get-rich-quick" appeals, or the difficulty which the average person has in working simple problems in arithmetic, we might conclude that the boy has many companions in his retardation. Possibly, far more of our own behavior would be aptly described as heedless than we should care to admit.

Unfortunately, mathematics really is a badly taught subject, and most adults have never learned to think correctly in terms of mathematical symbols. There appears to be no evidence to indicate that mathematics requires a special endowment; on the contrary, when school marks are intercorrelated, it is found that there is no indication of a special ability in mathematics. Most of the instruction is formalized, and fixed habits are acquired. When problems arise in everyday life situations, there is a minimum of transfer from the artificial instructions given in school. Realizing this fact, many people buy books on "mathematics simplified" to make up for their deficiencies. They know that they are inefficient and handicapped because they cannot think in terms of mathematical symbols. They have learned from costly experience that they make snap judgments in financial matters, that they cannot balance their checking accounts, and that relatively simple operations in arithmetic confuse them.

Except for a relatively few basic skills which must be mastered by drill, the entire curriculum should be a prolonged series of experiences in thinking. Even the difficulties of English spelling may be presented in such a way as to involve thinking. Possibly the drill upon number combinations, the achievement of reasonable legibility in handwriting, and a relatively small amount of "factual information" might be exceptions. Of course, some skills have to be improved by repeated practice, and certain facts have to be mastered by rote learning. In the efficient school, however, these phases of the curriculum will be reduced to the minimum essentials. Wherever it is feasible, the school

should present the curriculum as a series of graded occasions for thinking.

SOME EXAMPLES OF PROBLEM-SOLVING SITUATIONS

It would be a great mistake to believe that mathematics is the subject *par excellence* for giving the pupils sound training in the experience of thinking. As a matter of fact, nearly every subject in the curriculum lends itself to this objective. For one example, consider the short poem entitled "Memorabilia" which Browning wrote:

Ah, did you once see Shelley plain,
And did he stop and speak to you,
And did you speak to him again?
How strange it seems and new!

But you were living before that,
And also you are living after;
And the memory I started at—
My starting moves your laughter!

I crossed a moor, with a name of its own
And a certain use in the world no doubt,
Yet a hand's-breadth of it shines alone
'Mid the blank miles round about:

For there I picked up on the heather
And there I put inside my breast
A moulted feather, an eagle-feather!
Well, I forget the rest.

Is this incomprehensible? Not in the least, if we are willing to give the poem some thought. We shall first need to enlarge our experience a bit. Robert Browning was an intense admirer of Shelley, whom he had never met personally but whose poems he considered to be among the very best. The "you" in the first verse gives us a clue; Browning meets a person who had seen Shelley and had talked with him. Of course, he is excited; but the stranger laughs, perhaps contemptuously—possibly, in view of what we know of Shelley's life, hatefully. Then Browning shifts to an allegory, in which the symbolism is rather clear. If a hint or two are in order, let it be said that the moor symbolizes a dismal waste place, like the personality of this man who could not reverence the memory of Shelley, and that the feather represents another item which Browning can add to his memorabilia of

Shelley. The achievement of a satisfactory interpretation of this poem is an excellent opportunity for problem-solving.

For another example, assuming that all of us are students of psychology, let us try to figure out why the Communists have no liking for psychoanalysis. We might begin by reading Freud's *Civilization and Its Discontents* to learn what his social philosophy is, and then compare his views with the philosophy of collectivism. If that is too unstimulating a problem, we might try to find out why the majority of our English scientific terms come from Greek rather than from Latin roots. In fact, a reading of Kittredge and Farley's *Words and Their Ways in English Speech* would set us to thinking about many interesting problems connected with familiar words and their changing meanings. We might even try to find out why school and college marks are not always a reliable basis upon which to predict success or failure in after-school life. Of course, there are so many occasions for thinking that there is no need to multiply examples here. Every phase of the curriculum abounds in occasions for experiences in problem-solving.

THE CONDITIONS NECESSARY FOR THINKING

Reflective thinking, or reasoning, results when the individual faces some doubt or perplexity, some dilemma, some problem, some felt need for making a response other than that usually made. Often there are trials and errors, guesses, and testing of conclusions. As a rule, the process requires time and is controlled by the purpose of the learner. *When we examine the situations that lead to reflective thinking we find that each calls for a unique kind of attack.*⁶ For instance, each of the following situations requires a different type of thinking:

- a. Underline the word unlike the other four:

spondee
tribrach

ditrochee

ballade
choriambus

- b. RUN is to DEER as what is to FISH?

⁶ There are some general principles of thinking or "master principles," as they have been called, which have wide application. Logic is the science of correct thinking. "Every problem is distinct in that its accidental circumstances may vary, yet the general principles involved must follow norms of correct thinking." (R. J. Bishop.) See Duncker, K., "On problem solving," *Psychological Monograph*, 1945, 58, No. 5.

c. The following item from Binet's Intelligence Scale is no longer appropriate: State three differences between a king and a president. Why?

d. What is the meaning of these lines, quoted from Bassanio's Casket Speech?

Look on beauty and you shall see 'tis purchased by the weight,
Which thereby worketh a miracle in nature,
Making them lightest that wear most of it.

e. Factor $a^2 + 10a + 24$.

f. Is it true that German scientists have made more contributions than the scientists of any other nation? Defend your answer.

The ability to think necessitates a background of information germane to the problem about which the thinking is to be done. Thus, in situation a, one must have a knowledge of some of the rare types of meter in English versification to see that ballade (a French lyrical



Boys interested in science today may be the explorers of space tomorrow. (Courtesy of the Chicago Public Schools.)

form) is the misfitting term. In *b* the situation is relatively familiar to all of us; hence, problems like this are often presented in intelligence tests. In *c* one has to apply a background of experience in recent social history. Example *d* might baffle a person who has forgotten that Shakespeare delighted in plays upon words of double meaning and that *lightest* denoted *fairest* as well as a *minimum of weight* three centuries ago. Even for the person who has taken a single semester of algebra, *e* is easy enough. The only difficulty is to decide upon the factors of 24 and to determine the correct signs. In obtaining an answer to *f*, a procedure might be suggested: arrange lists of eminent scientists of various nationalities, and then compare the tabulations. Obviously, the solution in each of these little problems requires a different sort of background and a different procedure.

Thinking always involves a problem. If the pupil is to do any thinking, he must be confronted by a situation for which he does not have a prepared response and to which he is eager to make a satisfactory adjustment. Some situations that are full of problems for an adult leave the pupil unmoved. Consequently, the intelligent teacher attempts to present the curriculum in such a way as to meet the needs and interests of the learner. All of us find pleasure in thinking about our own difficulties and in figuring out the best ways of solving them. Abstract and hypothetical issues leave many of us in a state of indifference and unconcern. For example, few people would honestly admit that Michelangelo's "Figure of Adam" disturbs them. Whether the finger of God has just touched Adam's finger or whether it is about to touch Adam is a question which would "leave them cold." "What a pedantic controversy!" some would remark. Indeed, they might very well be justified in deriding a concern about this question. The point is, however, that many of the "problems" in school are likely to be regarded as just as artificial and far-fetched by the pupils as this one may have seemed to the reader.

On the other hand, this illustration does bring out one point in the strategy of teaching pupils. At least, the "problem" is a definite one and it may be presented in concrete terms. The art teacher can bring a reproduction of the fresco into her class for all to see. Sometimes, particularly in the problem-solving attack upon social issues, the discussion rambles along, the terms are not defined, and the original question is soon forgotten. If the problem situation is meaningful

to the pupils, it becomes the teacher's responsibility to direct the activity toward a solution and to keep the pupils "on the track."

Problem-solving involves the location, organization, and evaluation of data. It cannot be repeated too often that pupils do not think *in vacuo*; there are always facts and hypotheses derived from their past experience. Sometimes the data may be drawn from past experience right away; at other times the information must be found in books or in laboratory activities. Among the common errors in problem-solving are the following: insufficient or inaccurate data, inflexible habits of meeting various difficulties, failure to observe similarities and differences among the data, and snap judgments. The lack of adequate data may arise from the immaturity of the pupil, from "blind spots" in his experience, from restricted experience, or from low intelligence. One of the most hopeful signs in curriculum revision is that the difficulty of school experiences is now being established by scientific investigations of pupil maturity. Also at the present time, a great deal of attention is being devoted to the diagnosis and treatment of individual subject matter disabilities; hence some of the "blind spots" are being eliminated. Special provision is being made for the handicapped pupil through the establishment in the larger communities of special opportunity classes, and there is some encouraging evidence to show that better opportunities are being given to children living in economically and socially substandard environments.

Ability to organize data into meaningful relationships is partly dependent upon abstract intelligence, and great individual differences exist within a single classroom. Nevertheless, the teacher does not accept the notion that intelligence develops without experience. Even the slowest learners can benefit by experiences in problem-solving. The basic requisite is that the problems for retardates be well within their range of ability. Likewise, all pupils are able to learn some of the techniques for evaluating their conclusions. Under the guidance of the teacher, they can experience without harmful effects the outcomes of inappropriate solutions and achieve the thrill of satisfaction that comes when a real problem is correctly solved. Of course, throughout the process the teacher must be fully aware of the existence of great individual differences. Some pupils have but one talent, others have five, and a few have ten talents. It is not true, however, that slow learners are necessarily incapable of reflective thinking. On the contrary, at all stages of development, children can be taught to think

effectively within the range of their capacities and experience. Any pupil who has a reasonable capacity to profit by the ordinary curriculum should, at the junior high school level, find no difficulty in detecting fallacies in such prevalent superstitions, prejudices, and errors as Dunham has described.⁷

Summary

When mental activities are analyzed and described in isolation from one another, we may gain a great deal of interesting and valid information about the "structure of the mind." We may also be led to consider that thinking is something which is actually separable from the other aspects of experience. The truth is, however, that this point of view is nothing but a "stroboscopic" picture of the real dynamics. The occasion for thinking arises when we are confronted by an unavoidable situation for which we have no prepared reaction. Then we manipulate either the materials of the situation or the symbols thereof until we have devised a plan of action. Since no two situations are exactly alike, there is very little that we can learn in the way of specific techniques that may be applicable to all of them. The curriculum should be a prolonged series of experiences in meeting innumerable problems and in achieving a more or less satisfactory adjustment to each of them. The aim of the educational process is to enrich the experience of the pupil so that he may learn how to find data, organize them appropriately, and evaluate the possible consequences of various courses of action that he might take.

The procedures that are most inimical to the development of proficiency in reflective thinking and problem solving are two: overemphasis of rote learning and an overeagerness to stimulate thinking by assigning artificial problems. In some schools, the major emphasis is upon "subject matter mastery." The teachers are obsessed by the idea that the pupils must "get the facts," and they are extremely critical of problem-project trends in education. One of the most unfortunate by-products—that is, misuses—of the new standardized achievement tests is that they focus attention upon the "need" for bringing every pupil up to the norm for his grade and assumed capacity. Consequently, there seems to be an increase in the use of drill lessons, with the only improvement being that more attention is now paid to mo-

⁷ For challenging examples of the results of illogical thinking, see B. Dunham, *Man Against Myth* (Boston: Little, Brown & Co., 1947).

tivation. The result is a stultifying type of education that might be more appropriate for parrots than for boys and girls. Equally disastrous is the belief that problems can be "assigned" and that "the problem-solving approach" is the panacea for all educational ills. Such a belief leads to the absurd notion that facts are unimportant, that we must only teach pupils to think. Actually, facts are all-important; without facts we cannot think at all. Thinking is nothing more than the utilization of past experience in meeting a situation for which we have no prepared response. Like other abilities, it is amenable to improvement under the guidance of teachers.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Is it true that there is no such thing as a distinctive ability in mathematics? (Read E. Dexter, "Does Mathematics Require Special Endowment?" *School and Society*, Vol. XXXIV [1936], pp. 220-24.) Can you find any evidence to support the notion that facility in mathematics is a "primary mental ability"?
- 2 • Is it correct to say that a knowledge of the formal structure of thought will not suffice to make us clear thinkers? Skim through a few textbooks on college logic and report upon your findings. Would a mastery of higher mathematics benefit us more in daily situations?
- 3 • What do you think about the desirability of introducing a special course in which the emphasis would be upon the canons of clear reasoning? Are there not some general principles that could be applied to a great variety of practical situations?
- 4 • A large corporation has signs posted about its plants admonishing all employees, "Think!" Do you believe that this is a good way to stimulate people to be reflective? Can you devise a better plan?
- 5 • Have you ever been told that a certain subject would teach you to think clearly? If so, what subject? Did the advice work? Have you ever seen an advertisement of a correspondence course that would teach you "how to unlock the hidden resources in your personality?" What is your opinion of these courses?
- 6 • Could a person be a proficient thinker in one area—say, in mathematics—and be an inefficient thinker in other areas? (Laplace is an outstanding example. Is he typical or an exception?)
- 7 • Can a general habit of open-mindedness be taught? If so, how would you proceed to teach it?
- 8 • Illustrate the point that it is dangerous to teach nothing more than

specific habits. Are some specific habits necessary? Give some examples. How does the process of integrating knowledge into one's experience differ from that of acquiring specific habits? Explain.

- 9 • Give some examples of instances showing that mastery of fundamental principles is no guarantee of the likelihood that one will use them in meeting problems.
- 10 • Give some examples of genuine problems that have challenged you. Can you recall some attempts made to interest you in problems that "left you cold"? Is there any value in working on problems that do not meet your felt needs at the time? Answer carefully.
- 11 • It is often said that the teacher cannot do the pupil's thinking for him. All that she can do is to provide a situation, or sequence of situations, in which he must utilize his past experiences and thus, through the enrichment of his present experience, get ready for richer subsequent experiences. Do you agree? What circumstances might interfere with this outcome?
- 12 • Is it true that when the dynamic nature of reflective thinking is investigated, it is found to be orderly or disorderly? (See E. L. Thorndike and C. B. Upton, "An Experiment in Learning an Abstract Subject," *Journal of Educational Psychology*, Vol. VI [1922], pp. 321-29.) Try solving a simple puzzle and see whether your thinking proceeds by clear-cut steps or by what might be defined merely as a "participant activity." Should we teach children to think in terms of logical steps?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Andrews, T. G. (ed.), *Methods of Psychology*. New York: John Wiley & Sons, 1948, Chapter IV.
- Blackwood, Paul E., *How Children Learn to Think*. Bulletin 1951, No. 10. Washington, D.C.: U. S. Office of Education, 1955, 19 pages.
- Bruner, Jerome S., et al., *A Study of Thinking*. New York: John Wiley & Sons, Inc., 1956.
- Dewey, John, *How We Think*, Rev. Ed. Boston: D. C. Heath & Company, 1933.
- , *Logic—The Theory of Inquiry*. New York: Henry Holt & Co., 1938.
- Duncker, Karl, "On Problem Solving," *Psychological Monographs*, No. 270 (1945).
- Gates, A. I., et al., *Educational Psychology*, Third Ed. New York: The Macmillan Co., 1948, Chapters XIII and XIV.
- Hayakawa, S. I., *Language in Thought and Action*. New York: Harcourt, Brace, 1949.
- Henry, N. (ed.), *Learning and Instruction*, The Forty-Ninth Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1950, Chapters IV and VIII.

- , *The Psychology of Learning*, The Forty-First Yearbook of the National Society for the Study of Education, Part II (Chicago: University of Chicago Press, 1942), Chapter 12.
- Humphrey, G., *Thinking*. New York: John Wiley & Sons, 1952.
- Johnson, D. M., "A Modern Account of Problem Solving," *Psychological Bulletin*, Vol. XL (1944), pp. 201-29.
- Judd, C. H., *Education as the Cultivation of the Higher Mental Processes*. New York: The Macmillan Co., 1936.
- Kingsley, H. L., and Ralph Garry, *The Nature and Conditions of Learning* (2nd Ed.) Prentice-Hall, Inc., 1957, Chapters XIV and XV.
- Russell, David H., *Children's Thinking*. Boston: Ginn and Co., 1956.
- Scarles, H. L., *Logic and Scientific Methods*. New York: The Ronald Press, 1948.
- Skinner, C. E. (ed.), *Readings in Educational Psychology*. New York: Farrar & Rinehart, 1937, Chapter XIII.
- , *Educational Psychology*, Rev. Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951, Chap. XI.
- Symonds, P. M., *Education and the Psychology of Thinking*. New York: McGraw Hill Book Co., 1936.
- Wertheimer, M., *Productive Thinking*. New York: Harper & Bros., 1945.

12

CREATIVE THINKING AND LEARNING

In Dickens' novel *Hard Times*, Mr. Thomas Gradgrind says, "Teach these boys and girls nothing but facts. Facts alone are wanted in life. Plant nothing else, and root out everything else." The Gradgrind spirit persists into the present time, and in many schools there is still an excessive emphasis upon subject matter mastery. As Fletcher has pointed out,¹ some teachers are completely absorbed by the task of "putting the curriculum across"; hence, they neglect the expressive or creative aspect of the educational process. No doubt, two rather obvious reasons account for this neglect. First, we live in an acquisitive social order, in which the emphasis is upon possession and achievement rather than upon creation and esthetic experience. Second, educational psychology has been concerned with scientific experiments dealing with the mechanical phases of the learning process, and consequently the nature of creative processes has been somewhat neglected. Even the physical arrangements of the average classroom suggest a theory of education based upon passive absorption of facts rather than creative and expressive activities.

In the school that is alive to progress, the teacher will not be concerned primarily with the merchandising of subject matter. On the contrary, the emphasis will be upon the dynamic nature of learning itself. The teacher will stimulate and guide the psychological activities of the pupils, and will not be "a mere clerk in the storeroom of ac-

¹ Fletcher, J. M., *Psychology in Education* (New York: Doubleday, Doran and Company, 1934), pp. 302-06. See also Woodworth, R. S., and H. Schlosberg, *Experimental Psychology*, pp. 838-41 (New York: Henry Holt and Company, 1954).

cumulated knowledge.”² The great task is to discover the backgrounds, aptitudes, interests, and capacities of each individual pupil, and then to utilize this information in promoting the intellectual and emotional development of the learner.

Creative Imagination

Experimental investigations, as well as everyday observations, show that young children have great powers of creative imagination. In the average school, with its great emphasis upon fact-learning and drill lessons, these powers are not used as a point of departure. On the contrary, the procedure is one that will almost inevitably make the child matter-of-fact, unimaginative, and stodgy. The child-centered school, on the other hand, sets up an educational program that utilizes these creative powers and fosters their further development. As Rugg believes, no psychological finding of our age has had more far-reaching influence in vitalizing the educational process than the discovery of the fact that children have creative ability and that the school can help the child to develop these powers.³

CREATIVE IMAGINATION IN PLAY

Many parents have had the disappointing experience of giving an elaborate toy to a child and then finding that the toy is soon discarded. Children seem to like toys that can be manipulated in such a way as to produce a variety of happenings. The toy itself may be simple and inexpensive, but it must furnish a stimulus for some type of expressive or creative activity. For example, an elaborate and expensive electric train set shortly loses its play value because it has limited possibilities for manipulation. Objects that can be manipulated in various ways, that can be taken apart and put together, and that can be endowed with complex patterns of meaning serve as toys for young children. An arrangement of dining-room chairs may, for instance, become a train, a bus, or an airplane. Blocks may serve to build castles and palaces. If, on the other hand, the meaning is already suggested by an elaborate toy representative in the last detail, such as a completely furnished doll house, the possibilities for creative imagination are so meager that the object soon loses its play value.

² Frank, G., in H. L. Miller, *Creative Learning and Teaching* (New York: Charles Scribner's Sons, 1927), p. vii.

³ Rugg, H. O., and A. Shumaker, *The Child-Centered School* (New York: World Book Co., 1928), p. 228.

CREATIVE IMAGINATION IN STORIES

As all parents know, young children enjoy hearing fairy tales, adventure stories, and pleasing jingles. Some tales, such as "The Three Bears," may be requested over and over again. Each time a familiar story is reread, it seems to furnish additional stimulus for creative imagination and identification. As in the case of play, the line of development proceeds from the active and dramatic to the subdued and factual. When children begin to read, they prefer highly imaginative, illustrated stories that furnish a great deal of stimulation to creative imagination. Later, sex differences and individual preferences are indicated. Then, as a rule, boys prefer stories of adventure and discovery, whereas girls like sentimental love tales.⁴ In both sexes, the dominant motive is to find gratifying opportunities for identification with heroes or heroines who have attained those goals desired by the reader. Stories, therefore, furnish a vicarious satisfaction for unsatisfied desires.

CREATIVE IMAGINATION IN MOTION PICTURES

Observations of child behavior in the motion-picture theater are illuminating.⁵ When exciting scenes are displayed, the children applaud, shout encouragement, or become tense. It is apparent that powerful identifications have been established. Occasionally, the plot of a motion picture furnishes suggestions for a new type of play. In one community most of the boys were observed to practice assiduously with long whips after they had seen a picture in which the hero overcame his enemies by flicks of his whip. Recently a glorification of the "Superman" stimulated young boys to obtain "Superman" regalia and to create play activities in which they tracked down evil-doers. Among girls, at a later age, sentimental trash is read to satisfy the longing to know more about the "secrets of the movie stars." The girls do not need much encouragement to purchase the cosmetics and the styles of clothing endorsed by movie favorites. Boys appear to be somewhat more delayed in reaching the level of romantic identifications, and they continue to prefer adventure pictures.

⁴ Jordan, A. M., *Children's Interests in Reading* (Chapel Hill, N.C.: University of North Carolina Press, 1926).

⁵ Scagoe, M. V., "The Child's Reactions to the Movies," *Journal of Juvenile Research*, Vol. XV (1931), pp. 169-80.

CREATIVE IMAGINATION AND THE RADIO

During the great popularity of the "Buck Rogers" programs, the members of a high school physics class broke much apparatus by trying to duplicate those fantastic experiments. Textbook experiments seemed dull and commonplace as compared to those outlined in the radio programs. In some households the children listen to broadcasts for over two hours a day, particularly between the hours from six to eight in the evening. At this time there is a great variety of adventure thrillers, some of which have maintained their popularity for several years. In some cases television stories furnish leads for new forms of expressive activity in children's play. In a great many instances, these spontaneous interests may furnish important leads for educational guidance and direction. In many schools, however, they are utterly ignored, and sometimes they are actually discouraged. The alert teacher tries to utilize these interests as a starting point in education, seeking to lead the pupils to develop higher and more discerning interests.

In play, movies, and reading interests there appears to be a clear line of development. At first the interest is in highly imaginative activities, with few sex differences indicated. Later, girls commence to develop an interest in activities which enable them to secure identifications with romantic themes. Boys become more interested in opportunities to gain distinction as conquering heroes and adventurers. Both sexes engage in these spontaneous activities in order to secure vicarious gratifications for motives which are denied satisfaction in humdrum reality. These activities afford an outlet for creative imagination when it finds no opportunity for expression in their education.

Undoubtedly, some of these activities are of questionable value. A few of them may be actually pernicious in their effects upon the developing personality; many of them may be of indifferent educational value. Two courses of action are open. One is to forbid children to engage in forms of activity which adults consider harmful or time-wasting. Thereby many conflict situations are created: children may satisfy their impulses furtively without the knowledge of their parents and teachers, or they may openly rebel against restrictions. The second way is to become familiar with the normal interests and incentives of children, and then to plan a guidance program that will direct these impulses into more educative outlets. There is no reason for

believing that creative imagination may not have just as much a place in the mastery of arithmetic as in listening to a radio thriller. Of course, if such is the case, present methods of organizing and teaching arithmetic should undergo radical alterations. In schools where such reorganizations of subjects or activities of the curriculum have been undertaken, the results are gratifying, both in the heightened accomplishments of the pupils and in their enthusiasm for obtaining more education.

Creative Thinking and Invention

THE "STAGES" OF CREATIVE THOUGHT

On the occasion of his seventy-fifth birthday, the eminent Helmholtz performed an invaluable service for psychology by describing his methods of discovering new facts and principles in physics, physiology, and psychology. He said:

Often enough "happy thoughts" crept quietly into my thinking without my suspecting their importance at first; and then it was often impossible later on to recall under what circumstances they had come; they were simply there and that was all I could say. Sometimes they arrived suddenly, without any effort on my part, like an inspiration. So far as my experience goes, they never came to a fatigued mind and never at the writing desk. It was always necessary, first of all, that I should have turned my problem over on all sides to such an extent that I had all its angles and complexities "in my head" and could run through them freely without writing. To bring the matter to that point is usually impossible without long preliminary labor. Then, after the fatigue resulting from this labor had passed away, there must come an hour of complete physical freshness and quiet well-being, before the good ideas arrived. Often they were there in the morning when I awoke, but they liked especially to make their appearance while I was taking a walk.⁶

The illustrious mathematician Poincaré has written an analysis of his own mental processes in creative ability⁷ which fully substantiates the conclusions of Helmholtz. Rossman's study of the methods of thought employed by inventors also confirms the view that at least three "stages" of creative thought may be distinguished:⁸ first, there is a period of preparation; then comes a time of incubation; finally

⁶ Adapted, by permission, from R. S. Woodworth, *Experimental Psychology* (New York: Henry Holt & Co., 1938), p. 818.

⁷ H. Poincaré, *Science and Method* (New York: Charles Scribner's Sons, 1915).

⁸ Rossman, J., *The Psychology of the Inventor* (Washington, D.C.: Inventors Publishing Co., 1931).

there is a sudden illumination or flash of insight. Wallas has described a fourth "stage" which he calls *verification*.⁹

1. The "stage" of *preparation*. Nearly all creative thinkers report that they have to go through a laborious period of getting ready. A minority of poets and painters reported that they wrote or sketched on the spur of the moment, but most of them were fully aware of a long time of preparation.¹⁰ The characteristic feature of the time of preparation is that the problem is studied from all points of view, or that all the material is gathered for an artistic production, but there seems to be a blocking or inhibition in the mental processes. A study by Lowes reveals the arduous preparation that Coleridge made for his unfinished poem "Kubla Khan."¹¹ Apparently, the material was collected simply because of Coleridge's interest in Oriental legends. Every student is familiar with the fact that Coleridge had a vivid dream in which all these bits of knowledge seemed to combine themselves into a poem.

The preparatory period in creative thinking may be undirected by conscious purpose, as it probably was in the case of Coleridge. Because of interest in learning for its own sake, the individual may accumulate a vast amount of erudition on various subjects. From this source may come the flashes of insight which, on some occasions, may find expression in works of art or scientific discoveries. This period of preparation may be deliberate, as in the case of an individual who learns all that he can about a given field of knowledge in order to find a basis for new discoveries or original ideas. Before writing "The Legend of Sleepy Hollow," Irving became thoroughly familiar with the folklore of the Hudson River country. Candidates for advanced degrees are counseled to discover a problem for their dissertations by first becoming thoroughly acquainted with all the literature in their chosen field.

At this point conventional education often leaves off. Most of the emphasis is placed upon preparation—that is, upon the passive absorption of facts and the learning of basic skills. Recitation periods, examinations, and drills are provided to achieve this objective. In other

⁹ Wallas, G., *The Art of Thought* (New York: Harcourt, Brace & Co., 1926).

¹⁰ Patrick, C., "Creative Thought in Poets," *Archives of Psychology* (1935), and "Creative Thought in Artists," *Journal of Psychology*, Vol. IV (1937), pp. 35-73.

¹¹ Lowes, J. L., *The Road to Xanadu* (Boston: Houghton Mifflin Co., 1930).

words, the authoritarian school tends to emphasize the "intake" side of the learning process. The use to which the curriculum may be put by the individual pupil is not taken into account. Sometimes there is an unqualified acceptance of the doctrine of formal discipline.¹² Of course, factual knowledge and skills are essential for the pupil; but it is important to teach the pupil how to use them in expressive activities. Any adequate education, therefore, takes into account the other "stages" of the creative process.

2. *The "stage" of incubation.* A most interesting characteristic of the creative thought process is that there seems to be a time of "incubation." Two examples from Patrick will indicate how creative artists go through a time of apparent inactivity before they get the "flash of inspiration":

I have an idea in the back of my mind for a long time, sometimes a week or two. I don't think constantly about it, but it keeps coming back.

I may get an idea for a poem from something that I see, which may be with me for a long time. For instance, I saw a nun leaning over a pool of flamingoes, and I got the idea of both being in captivity. I was a whole year trying to write that. I knew that it would be a sonnet or lyric, but that was all.¹³

It is a familiar observation that a prolonged period of hard work sets up a great many blockings and inhibitions. Shifting from one phase of the work to another may bring retroactive inhibitions¹⁴ and confusions. A sort of "plateau effect" may appear, but a period of rest or recreation may bring one back to the task with renewed zeal. In the better school, therefore, there will be a stimulating variety in the class work, and the teacher will set up learning situations in which "plateaus" are reduced to a minimum. Anecdotes about the methods of work used by creative geniuses reveal that many of them do not follow in general a slavish, mechanical routine. On some occa-

¹² Although there is some truth to the doctrine of formal discipline it needs many amendments, as has been shown in Chapter 10. The more scientifically valid concept which fits the facts is known as "transfer of training," or "transfer of learning."

¹³ Patrick, C., *op. cit.*, p. 30.

¹⁴ "Retroactive inhibition" is the name used to denote the interference of a more recently learned activity with one learned previously. If, for instance, a pupil learns a group of facts in geography and then immediately learns how to get the volume of solids, he may be unable to recall the most recently learned information in geography. Retroactive inhibition, then, is the tendency of a later learning to impair an earlier learning.

sions they may work uninterruptedly for hours, whereas on other days they may work but a few moments. All evidence points to the conclusion that the period of incubation cannot be forced or mechanized. There is evidence, however, that the idea recurs again and again during this period, and that under appropriate conditions it is definitely related to a specific goal.¹⁵ The school, therefore, should attempt to maintain conditions favorable to this end.

3. *The illumination.* A famous archeologist related that for a long time he labored in vain to decipher the inscription on a broken fragment. One night he dreamed that an Assyrian priest appeared and showed him the whole inscription. So vivid was the dream that he awakened and wrote down the translation. The next day, upon resuming his study, he found that the translation was plausibly correct. This anecdote illustrates a characteristic of creative thinking that has frequently been noted. The illumination seems to come with amazing suddenness, to give a sense of elation, and to mystify individuals who are untrained in psychological analysis. If the individual has the requisite technical skill or scientific training, he can utilize these flashes of insight in creative productions. Writers like Emerson and Hawthorne kept journals or commonplace books in which they jotted down all their inspirations. A familiar characteristic of these illuminations is that they are soon lost unless some immediate record is made. When notes are taken, they may serve as leads for new scientific research or as the basis for original works of art.

4. *The verification.* The final "stage" in a complete act of creative thinking is to give it expression in some tangible form. The trained scientist organizes the "inspiration" into hypotheses for laboratory testing and verification. The writer expresses his ideas in some appropriate literary form, and the painter puts the "illumination" on canvas. Sometimes, of course, the results are disappointing and fall short of expectation. As a result of prolonged self-training, a musician reports:

I had at times curious experiences of having glorious sounds leap unexpectedly into my mind—original melodies and complete harmonies such as I could not conjure forth at will, and exalted qualities of tone such as I had never heard nor before imagined. . . . I shall never forget the disappointment I experienced when I first wrote down a composition and

¹⁵ Patrick, C., *op. cit.*

played it. Could it be that this rather uninteresting collection of sounds was the same as the theme that sounded so glorious in my mind?¹⁶

Readers of the lives of great scientists know that most of them had to make many attempts before they finally obtained a solution of their problems.¹⁷ Most original manuscripts of great literature show that the authors spent much time in careful revision and reorganization. "Hunches" may be wrong; therefore, they have to be tested and evaluated. At this point the thought processes are reflective and critical. Consequently, it is essential to have a thorough knowledge of the field and an adequate mastery of technique. Many persons have "good ideas" but no skill in expressing them. For that reason, the school must teach pupils how to find an appropriate medium for self-expression and how to weigh the relative value of their "inspirations."

EXPERIMENTAL STUDY OF CREATIVE THINKING

Patrick asked a group of artists to try to find some inspiration in passages of Milton's *L'Allegro*, and a group of poets to get inspiration from a mountain landscape picture.¹⁸ Since the products were uniformly excellent, she concluded that the artists and poets were not hampered by the demands of the experimental setup. Most of them said afterward that they had worked in their customary manner. Groups of non-artists and non-poets furnished a basis for comparison. All her subjects, both the gifted and the nongifted, worked in about the same general way and gave evidence of following the four steps in creative thinking. Apparently, the difference between excellence and mediocrity of creative ability is one of degree, not of kind. This finding indicates that it is possible for the school to accomplish a great deal in encouraging all pupils in the acquisition of some facility in creative thought.

Platt and Baker have reported that chemists follow these four steps in inventive thinking:¹⁹ first, they get their minds "soaked full of data on a problem"; then they have a period of intermission or relax-

¹⁶ Cowell, H., "The Process of Musical Creation," *American Journal of Psychology*, Vol. XXXVII (1926), pp. 235-36.

¹⁷ See, for example, standard lives of Thomas Edison and Dr. Ehrlich.

¹⁸ Patrick, Catherine, *op. cit.* (Every serious student ought to read these important investigations.)

¹⁹ Platt, W., and B. A. Baker, "The Relation of the Scientific 'Hunch' to Research," *Journal of Chemical Education*, Vol. VIII (1931), pp. 1969-2002.

ation. Next, "an apparent solution or proper method of attack" emerges when they "are not formally working on the problem," and have no papers before them. This thing occurs only when the "mind is completely saturated with the problem." Finally, the solution is reached or the problem is regarded as too difficult. Meinelcke's analysis of the thought processes of a young inventor fully supports these conclusions.²⁰ On one occasion, after a prolonged and futile attack upon a problem, while the inventor was taking a walk, the correct method of procedure suddenly occurred to him. Hastening back to his laboratory, he attempted a new trial on the basis of his "inspiration," and was soon able to bring his work to a successful completion.

SOCIAL FACILITATION AND CREATIVE THINKING

Cooperative undertakings seem to facilitate creative endeavors.²¹ The creative adult familiarizes himself with the previous work done in his field, and sometimes he associates himself with others who are engaged in the same task. Thereby he may get new leads to the solution of his problem and find further incentive to keep at the task. As a rule, creative thought is close to reality, and its end results are given to the social group. The inventor must be thoroughly familiar with the needs of society and with the field in which he is working, otherwise his inventions might be without use. The poet and the artist must, of course, have strong powers of imagination, but they must also possess a sound knowledge of human nature, if they are to win an audience. Sometimes, to be sure, the creative genius may be far in advance of his age or may work in total indifference to contemporary societal needs, but, unless a later age finds social value in what he has accomplished, he is either forgotten or

²⁰ Reported by R. S. Woodworth, *Experimental Psychology* (New York: Henry Holt & Co., 1938), p. 820.

²¹ There are great differences among individuals and their ways of adapting themselves to group relationships. Dominance-submission problems arise: Some persons are strongly inhibited in the presence of others; and still others become overdependent in the social group. Furthermore, the nature and the size of the group have important influences upon either stimulating or inhibiting creative endeavor. Within the democratic classroom, however, the situation may be controlled by the teacher, and many of these difficulties can be obviated. Similarly, in adult groups joined together for creative experiences in the fine arts or for the development of appreciations, a well-qualified leader is necessary, especially at the start, to define the roles and start the members of the group upon some desirable course of action. Hobby clubs, which hold interests of old and young alike, are a good example.

regarded as a deluded eccentric. In theory, creative expression may be the result of severe conflicts that must be expressed through the medium of art, music, literature, invention, or theory. As a matter of common observation, however, a classroom, a community, or a nation whose inhabitants are under great stress do not often produce creative work. On the contrary, the intense conflicts seem either to induce generalized aggressions or docile acceptance. There is reason to believe that in the democratic school the pupils have the best possible opportunity to engage in creative learning. In other words, creative endeavor should always have a bearing upon the social group. When the social situation fosters and encourages creative activity, great advances in art, literature, and inventions logically follow.²² Some environments and some epochs in history appear to have stifled creative thought.

Creative thinking should not be confused with idle reverie. As a matter of fact, most creative thinking is goal-directed and deliberate. The inspirations are consciously sought so that a more adequate solution for a perplexing problem may be found or so that more appropriate media for self-expression may be discovered. The new experiences are then shared with the social group. For instance, the traditional way of painting shadows was to represent them by blacks and grays. The impressionistic group, however, looked more closely and discovered that shadows may be more appropriately represented by various hues, and they sought to call this discovery to the attention of all who look at their paintings. There is no such thing as a genius who is not recognized at some time or in some locality as having made a worthy contribution to society. Idle daydreams may have expression in bizarre, eccentric activities, but their social value is either slight or nil.

The school must attempt to set up situations that will facilitate the development of controlled imagination. Consequently, the pupils should be encouraged to look for new solutions to problems and to find adequate media in which to express their ideas. If the teachers are not impatient and hasty in judging by adult standards of technical excellence, the pupils will not be stifled and inhibited in crea-

²² Lewin, K., R. Lippitt, and R. K. White, "Patterns of Aggressive Behavior in Experimentally Created 'Social Climates,'" *Journal of Social Psychology*, Vol. X (1939), pp. 271-99.

tive activities. The emphasis should be upon cooperative endeavors and the sharing of new discoveries. One of the best ways in which to keep the thought processes on a sound course of development is to encourage the expression of new ideas. Then the teacher and the other pupils have opportunity to correct any tendency towards bizarre expression and goals that do not result in personality growth. The dividing line between idle fantasy and creative thought is, indeed, thin, and unless ideas are shared there is a real danger of acquiring freakish, eccentric, and useless notions. In school, therefore, appropriate situations should be provided for the stimulation of sane and wholesome creative thoughts. More important still, the pupils should be given ample opportunities to express themselves and thus to have bizarre trends corrected at the outset.

The presence of other pupils engaged in similar activities greatly facilitates the responses of the individual. He is encouraged to persist in his activity, and he finds opportunity to gain new insights from the experiences of his classmates. If, however, his accomplishments are judged in terms of adult perfectionist standards, or if he is compared with pupils of greater ability, he may become discouraged. His pleasure in sharing his own experiences with others in the social group may be lost. Therefore, the teacher must not uphold standards that are beyond the possibility of attainment by the pupil, nor should he compare the performance of one pupil with that of another. The desirable procedure is to point out to each pupil just how he is improving in creative performance and to suggest new attacks that might hasten the improvement. Eventually, of course, each pupil comes to realize his limitations; but he is not discouraged by the abrupt realization of incapacity for outstanding creative activity.

Appreciation

It is a mistake to think of appreciation as a passive, absorptive response. On the contrary, appreciation is an active, dynamic reaction. Scientific experiments have demonstrated the fact that there are measurable amounts of muscular reactions in such acts as listening to a symphony orchestra, looking at a painting, or silently reading a book. In a sense, the individual "puts himself actively into the situation." This sort of behavior is called *empathy*. It is an imaginative projection of oneself into something. In a sense, empathy is the basis

for all meaning.²³ Certainly, it plays a large part in appreciation. Unless the pupil can put himself into the situation, he cannot appreciate it; in fact, the situation has no meaning at all for him. Every motion-picture goer has observed with amusement and interest the behavior of children when exciting scenes are shown. Their appreciation is exhibited in explicit, active ways. Adults, on the other hand, have learned to subdue their reactions to implicit, almost imperceptible degrees. Nevertheless, both children and adults respond actively to all situations that arouse their appreciation. The only difference is that adult behavior has been conventionalized and subdued.

EMOTION AND INTELLECT IN APPRECIATION

Although appreciation is usually accompanied by pleasurable emotions, the experience also includes understandings. To say that one likes something but is unable to explain why is the statement of a sentimentalist. A person who really appreciates something has a background of experience that enables him to discern qualities of excellence and to detect all the elements of a given situation. Thereby he is able to have a sense of relative values. For example, in listening to Tschaikowsky's *Symphony No. 4 in F Minor*, he is able to recognize the composer's debt to Beethoven and to follow closely the themes in each of the four movements. Because of his background of understanding, he is able to converse lucidly about the "capricious arabesques" of the third movement, as well as about other parts of this symphony, the life and times of the composer, and other symphonies. If he appreciates this music, he can clearly tell what it means to him. If he does not like it, he can analyze the qualities that displease him. In other words, the individual who appreciates music has understandings as well as emotional responses.²⁴

The necessity for knowledge as a basis for real appreciation can

²³ Schoen, M., *Art and Beauty* (New York: The Macmillan Co., 1932), pp. 132 et seq. Tolman, E. C., "Freedom and the Cognitive Need," *American Psychologist* IX (1954), pp. 536-538.

²⁴ It would be a Hogarthian caricature, however, were all our appreciations to be intellectually analyzed. Premature emphasis upon the formal aspects of art would stultify the growth of appreciations and of zeal to create. The couplet quoted from *Macbeth*, for example, might be enjoyed merely for its rhythm and in disregard of its meaning. Nevertheless, great art is distinguished by the fact that continued study brings enrichment of appreciation of it. In other words, as one's background of understandings broadens, so one's ability to grow through esthetic experiences increases.

scarcely be overemphasized. Take, for instance, the following lines from the opening scene of *Macbeth*:

Fair is foul, and foul is fair.
Hover through the fog and filthy air.

The entire meaning of the couplet is lost unless the pupil realizes that this *credo*, in which the three Witches join, is an old folk-belief about evil spirits: that not only are their moral standards the exact reverse of those of human beings, but also their esthetic preferences likewise are the opposite of human preferences. To be sure, a complete understanding may sometimes destroy appreciation, as in the case of the pupil who learns that *Gulliver's Travels* and "The One-Hoss Shay" were intended to be biting satires. That fact, however, does not justify the nonintellectual, sentimental teaching of appreciations. Unless there is a basis of understanding, there cannot be any genuine appreciation.

TEACHING APPRECIATIONS

The normal procedure in teaching appreciations is to give the pupil experience in creative undertakings. Unfortunately, many programs of education had little or no place for creative activity. The factual, drill approach was used in all subjects, whether fractions or poetry, spelling or drawing. Consequently, creative impulses were considered to have no place whatsoever in the school. Activities arising from the spontaneous interests and the needs of the pupils were relegated to a place outside the curriculum. The so-called "appreciation" lesson was nothing more than a variant of the drill procedure. Although the past tense is used here, this method of procedure has by no means entirely passed away. Wherever it still lingers, there can be no real guidance in the development of appreciations.

Appreciation implies that we enter into some degree of coincident thinking and feeling with a creative genius. To do so, we must have some basis of experience in creative activity ourselves. That does not mean, however, that we cannot appreciate music unless we can compose or play like a virtuoso. The activity necessary in true appreciation may give us some creative experience. The youngster who contrasts paintings of sunsets with the vivid colors of the setting sun thereby learns a great deal about appreciation. The part that creative thinking plays in all our activities is seldom realized. For instance, we believe

that we can read the following sentence with full understanding: *The man rode down the street*. Each reader, however, has a different mental image of the man, of the street, and of the object or animal ridden. Reading itself is a creative activity, and when it is rightly taught, it involves appreciations as well as mechanical skills in eye movements.

For an illustration of how appreciations might be taught, consider how to present the familiar "Bugle Song" from *The Princess*:

'The splendor falls on castle walls
And snowy summits old in story:
The long light shakes across the lakes,
And the wild cataract leaps in glory.
Blow, bugle, blow, set the wild echoes flying,
Blow, bugle; answer, echoes, dying, dying, dying.

O hark, O hear! how thin and clear,
And thinner, clearer, farther going!
O sweet and far from cliff and scar
The horns of Elfland faintly blowing!
Blow, let us hear the purple glens replying:
Blow, bugle; answer, echoes, dying, dying, dying.

O love, they die in yon rich sky,
They faint on hill or field or river:
Our echoes roll from soul to soul,
And grow forever and forever.
Blow, bugle, blow, set the wild echoes flying,
And answer, echoes, answer, dying, dying, dying.

One high school class regarded this poem as a clear invitation to do an interesting bit of creative reading. By group discussions, they obtained a mental image of the scene, the speaker, and the listener. Two members, talented in art, painted a picture of the background, which greatly helped in visualizing the material of the first stanza. After much debate, the class agreed that the speaker was a young man addressing his bride. She, they imagined, was first elated by the beauty of the landscape and the sound of the bugle; but, as they stood there, the darkness fell and the echoes died away. Then she became depressed at the thought that everything is fleeting and transient, perhaps even their love. He, therefore, assures her that the one abiding reality is love, which is passed from one generation to the next. What does it matter if Tennyson may not have had in mind

such a meaning? The whole class had an enjoyable half-hour, and most of them gained in the experience necessary for creative reading.

It would be a great mistake to assume that appreciations cannot be taught in any other courses than art, music, and literature. As a matter of fact, practically any subject in the curriculum may, *if properly taught*, result in worthy appreciations. In shorthand and typing, properly assigned readings and class exhibits may lead into an appreciation of our economic order and of the cultural advantages that it has made possible. Geometry, often taught in a factual and unimaginative fashion, should include special lessons to give the pupil an appreciation of carefully reasoned thought. In fact, if the curriculum were presented rightly, appreciations, as well as factual knowledge, would be the outcome, and nearly every subject would give ample stimulus to creative thinking. In the past, insufficient attention has been paid to the possibility of conserving and developing worthy appreciations. In fact, when routine drills are emphasized, the outcome may be an actual distaste for a given subject. All subjects should be taught in such a way as to give the necessary skills and the understandings basic to efficient living, but all of them should culminate in a genuine appreciation of our cultural inheritance.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • In subjects where drill is necessary, how should it be initiated and directed so that desirable attitudes will not be destroyed? Which is the easier type of lesson to teach, the appreciation or the drill?
- 2 • In what ways can understandings contribute to appreciation? Show how you would use understandings to develop appreciation in one of the ordinary school subjects.
- 3 • Find in your own experience several examples of loss of factual knowledge in a subject you once knew fairly well. Perhaps the passive subjunctive of a fourth-conjugation Latin verb or a fifth root might be examples. Even though the facts seem to be forgotten, does anything remain? Do you have a continued liking for the subjects in question?
- 4 • Show how the old-fashioned school judged pupils' literary and artistic output by adult standards of technical excellence. Is that a good way to inculcate a desire to improve the form of a creative production? Explain.
- 5 • How much attention was given in your elementary school to

creative activities? Were you interested in perfecting your techniques so that you could express yourself more adequately?

- 6 • What appreciations should be the outcomes of a course of study in American history? Could the course be presented in such a way as to inspire a pupil to read extensively in after-school life about American history? Have you kept up your own reading in the subject? Why, or why not?
- 7 • What sorts of toys do young children continue to use in their play? What can we learn about creative imagination from studying the spontaneous play interests of young children?
- 8 • What sorts of movies and radio programs do children like? Try to collect a list of preferences from children you know, and then classify the findings in terms of the ages of the children.
- 9 • Try to recollect the type of books you read when you passed through "the reading craze." How old were you at that time? Were the books principally imaginative or factual? Why do you now read less than you did at that time?
- 10 • Do inventions and inspirations just "spring into the mind"? How might one prepare himself to have many "illuminations"?
- 11 • Can pupils be compelled to write an "original composition"? Justify your answer.
- 12 • What is the proper role of the teacher in an appreciation lesson? Explain in full with illustrations. Can appreciations be taught? Explain.

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Dennis, W. (ed.), *Readings in General Psychology*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1949, Chap. VII.
- Downey, J. E., *Creative Imagination*. New York: Harcourt, Brace & Co., 1929.
- Fletcher, J. M., *Psychology in Education*. New York: Doubleday, Doran & Co., 1934, Part II.
- Hart, J. K., *Creative Moments in Education*. New York: Henry Holt & Co., 1935.
- Hartman, G., and A. Shumaker (eds.), *Creative Expression*. New York: John Day Co., 1932.
- Hutchison, E. D., *How to Think Creatively*. New York: Abingdon-Cokesbury, 1949.
- Lowes, J. L., *The Road to Xanadu*. Boston: Houghton Mifflin Co., 1927.
- Mearns, H., *Creative Power*. New York: Doubleday, Doran & Co., 1929.
- Patrick, C., "Creative Thought in Poets," *Archives of Psychology* (1935).
- , "Creative Thoughts in Artists," *Journal of Psychology*, Vol. IV (1937), pp. 35-73.

- , *What is Creative Thinking?* New York: Philosophical Library, 1955.
- Rugg, H. O., *Foundations for American Education*. New York: World Book Co., 1947, Part IV.
- Schoen, M., *Art and Beauty*. New York: The Macmillan Co., 1932.
- , *The Psychology of Music*. New York: The Ronald Press, 1940.
- Skinner, C. E. (ed.), *Readings in Educational Psychology*. New York: Farrar & Rinehart, 1937, Chap. XII.
- , *Readings in Psychology*. New York: Farrar & Rinehart, 1935, Chap. XIX.
- Supervision and the Creative Teacher* (a collaboration), Fifth Yearbook of the Department of Supervisors and Directors of the National Education Association. New York: Teachers College, Columbia University, 1932.
- Taba, H., *Dynamics of Education*. New York: Harcourt, Brace & Co., 1932.
- Tilton, J. W., *An Educational Psychology of Learning*. New York: The Macmillan Co., 1951, Chap. VI.
- Wallas, G., *The Art of Thought*. New York: Harcourt, Brace & Co., 1926.

PART

IV

ADJUSTMENT AND MENTAL HYGIENE

13

EMOTION AND ADJUSTMENT

Our "feelings" are tremendously important in life, and emotions have more and more become the concern of psychology and education in recent years. "All learning has emotional correlates," a recent UNESCO report asserts, "and leads to a modification of attitudes, sometimes, especially in childhood, affecting them very profoundly and in ways most unexpected to the naïve observer."¹ How profound this effect is, the report adds, depends upon a multiplicity of factors past and present, interior to the person and exterior to him, which constitute what might be likened to a field of force. And the American Association of Colleges of Teacher Education says: "It would be catastrophic indeed if the schools turned out graduates who were intellectually competent but emotionally disturbed, educated as much for antisocial as for constructive behavior. It is inevitable that society will require the schools to give continued attention to the child's personal adjustment and well-being."²

That all learning has emotional and maturational as well as intellectual aspects is brought out clearly in the UNESCO report. How these aspects are related to each other "depends upon the age of the human being and upon the circumstances in which learning takes place." For example:

A child learns to walk only when readiness has been achieved through physiological maturation. The success or failure which attends his early efforts, the attitude of over-protective fear, or of encouragement and praise shown by the parents, however, affect him emotionally in a way which not

¹ *Education and Mental Health* (Paris: United Nations Educational, Scientific and Cultural Organization, 1955).

² *Teachers for a Free People* (Oneonta, N.Y.: American Association of Colleges of Teacher Education, 1956).

only tinges the immediate experience but may color his attitude toward subsequent situations of effort and achievement.³

When it comes to schooling, the report adds:

Learning in the strictly educational sense will not proceed satisfactorily if the child's emotional life is disturbed; conversely, the development of personality may be fostered or checked by the way in which a child is able to respond intellectually to the demands made by the school. Hence mental health and intellectual progress depend upon the way the school adapts itself to the developmental level of its pupils.

School and Emotion

Emotion enters into every activity of life, of course, and therefore of school. Describing the teacher's relationship to the children and their background, Lucile Lindborg points out that the teacher can learn much through a study of the children:

How do they feel about themselves, their peers, their parents, their community? From what kinds of background do they come? What is the source of family income? Are both parents employed? Who are the children's friends? What kinds of relationships do they have with these friends? What do they do during their vacations? ⁴

The teacher learns about the children's backgrounds in a number of ways, according to Dr. Lindborg—by observation, for example:

What are their attitudes when they arrive in the morning? Do they look as if some one had helped them get ready for school? Do they have much to share? Do they play with other children? Are there cliques or gangs within the group? Are they able to organize group games readily?

And what about the neighborhood? "The teacher observes the psychological climate of the community. How do people behave toward each other? What are their major interests? How do they satisfy these interests?" It may also be helpful, Dr. Lindborg believes, for the teacher to list needs he or she thinks the children might have. One such list could well be made up of "specific emotional and physical needs" that appear to be pressing.

Emotional experiences flow in a continuous stream through all phases and facets of a child's development, Jersild says.⁵ "Emotion is

³ *Op. cit.*

⁴ Lindborg, Lucile, *The Democratic Classroom: A Guide for Teachers* (New York: Teachers College, 1954), p. 115.

⁵ Jersild, Arthur T., *Child Psychology*, Fourth Ed. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954), p. 320.

involved in the whole business of living." Jersild speaks particularly of what he calls "activity pleasure"—satisfying, pleasure-producing conditions that range from stimulation of specific sense organs to conditions involving the free flow of activity—and also of the opposite, "boredom." The term *boredom*, he says, covers a variety of experiences that are "negative"—a complete absence of "activity pleasure." With specific reference to school education Jersild says:

Much of children's boredom centers in the school. It can especially be noted in the average classroom where much of the time of children is spent in idling. For every child in school who is dissatisfied because the work is too hard there are probably some who are bored because the work is not challenging. Such boredom can easily be taken for surliness. Thus a girl who had been apathetic and something of a "fringer" during the latter part of her stay in nursery school and kindergarten blossomed forth with new interest and vitality when she moved on to the first grade and became absorbed in reading and other school projects.

Emotions as an all-important factor in life and therefore in education were brought into special prominence during the late thirties and early forties of this century, when Caroline B. Zachry, Daniel A. Prescott, and others were demonstrating effectively, in their studies of adolescence and teacher education, that emotion is in no sense incidental, but is "intrinsic in every experience, a factor in all conduct."⁶ In their report to the American Council on Education, Prescott and his associates stressed the importance of having teachers and other workers with children and youth accept all of them emotionally—"that they reject no one as hopeless and unworthy." They said:

There seem to be three bases upon which this fundamental valuing of human beings can rest. One is scientific: To say that a person's behavior is shaped by his past experiences, his present situation, and his hopes for the future, is to hold that it is natural behavior under the circumstances. Workers who believe this cannot seriously reject or blame a human being for what he does, because his behavior is seen only as a symptom of underlying causes. This does not imply, of course, that undesirable behavior is condoned. Quite the contrary; inappropriate behavior defines some of the tasks. Understanding workers try to gauge what conditions, relationships, and experiences have been and are exercising unwholesome influences and attempt to arrange or supply others that will neutralize or replace these undesirable influences. Two philosophical conclusions reinforce this scientific basis for accepting all children and youth. One is the belief that all

⁶ *Helping Teachers Understand Children* (Washington, D.C.: American Council on Education, 1945).

human beings are inherently valuable and therefore have the right to all the help that can be given them in achieving their best development. The other is the recognition that all human beings potentially can make some contribution to carrying on the society into which they are born and therefore deserve respect for whatever talents they can put to work for the common good. Both of these philosophical valuations of individual human beings imply that it is the obligation of teachers to accept every child as having intrinsic worth, no matter what his capacities or behavior. Also connected is the further obligation to assist every human being in consummating his potentialities. Whatever may be the root from which develops an emotional acceptance and valuing of children and youth, we have found that this attitude characterizes those workers who are most effective. We believe that it is a prerequisite to genuine understanding.

Emotional basis of action is likewise placed at the top of a list of approaches to the problems of human nature by a group of contemporary British research workers.⁷ Referring to the work of Freud, Jung, and Adler as "depth psychology"—of fundamental importance to teachers who are looking for "ways of teaching which will liberate the creative powers latent within themselves and their pupils"—Morris says:

This does not mean that we believe that the rest of psychology is either wrong or entirely irrelevant for teachers. On the contrary we believe that psychology is a many-sided enterprise and that every approach has its own particular contribution to make. . . .

It is necessary to look at the work of all three [i.e. Freud, Jung, Adler], sympathetically and yet critically, without prejudice or favor, discover what the general movement associated with their names has already done and may yet do for education. For the revolution in education which the discoveries of depth psychology imply has only begun.

All forms of dynamic psychology stress the fundamental importance of striving and feeling in behavior, Morris and his colleagues point out. "Depth psychology in particular regards 'emotion,' denoting both quality of feeling and impulse to action, as the basis of all human behavior. It is for the same reason that all modern theories of education stress 'interest' as the single most powerful factor in learning." In emphasizing the integrated character of growth and learning Morris and his associates say:

One of the great mistakes of orthodox educational psychology has been

⁷ Morris, Ben, et al., "Freud, Jung and Adler: Their Relevance to the Teacher's Life and Work," *The New Era in Home and School*, vol. 37, No. 1 (January, 1956).

to treat the intellect and the emotions as if they were, in fact, separable functions. To some extent they may, of course, be studied separately; but all problems represent unsolved problems in learning. The failure to grasp the relations between thought and feeling underlies most educational failure, and the understanding of this relationship is the basis of most educational success.

Feelings are getting into the educational picture more and more—or at least we are recognizing them and accepting them as important. In her little book, *People Are Important*,^{*} Ruth Knox Evans has a chapter that starts out by asking “How are your feelings today?” and then follows with questions and comments:

Let's hope you haven't a headache or a sore toe. But are you feeling friendly? Are you mad at any one? Have you gotten your feelings hurt lately?

All of the people of the world sometimes have trouble getting along together. But the things that make some of us mad may not bother other people at all.

You may want to fight if some one pushes ahead of you in line. But there are others who don't in the least care, because they aren't in very much of a hurry. . . .

For whatever reasons, at one time or another all of us feel we must have a bit of a fight. Just as people have different ways of showing friendliness, they have different ways of fighting. It's all in the way we've been brought up. . . .

Dr. Evans suggests the fundamental approach to emotional behavior—to try to understand the cause:

We might try to find out just why a certain Johnny pushes other people around, or likes to gossip or call names.

It may mean that Johnny is afraid other people won't like him, even though he wants them to very much. It may mean that he feels uncomfortable, because he isn't quite sure how to act. It could be he's sick or just doesn't get enough to eat. It is almost never because he was born a mean person.

And while we're looking into Johnny's feelings, we'd better take a look at our own.

The positive values of the emotions, especially in work with young children, are stressed by Katharine Whiteside Taylor. “Emotions are for power,” says Dr. Taylor:

^{*} Evans, Eva Knox, *People Are Important* (Irvington-on Hudson, N.Y.: Capital Publishing Company, 1951), p. 86.

For those who may still have lurking within any vestige of the Puritanical ideas that "it is too bad we have emotions and well-bred persons certainly do not show them" it may help to point out two things: the unrecognized tribute we continually give our emotions, and their value as a source of power and warmth. We say "that hurt his feelings," meaning that cut him to the quick, it got him "where he lives." For it is truly where we *feel* that we live. . . .

Emotion appears high up on the evolutionary scale, not in the lower forms of life. Plants, fish, reptiles do not have them. They have nerves which register sensations but no emotions. They are "cold." Mammals do have emotions, and we therefore often feel real kinship with them.

Emotions are for power. They evolved, as man developed, to help him in getting food or mate, for defending them, or for flight to escape from threats too great to face.⁹

Dr. Taylor gives an example of how anger in young children can be "channeled":

One day four-year-old Jimmie's older sister Helen made a plate of fudge for her Bluebird meeting and set it onto the window sill to cool. Its savory odor went all through the house. Jimmy wanted a piece. He loved fudge more than anything. But his sister said, "Don't you dare touch it, you little brat, or you know what you'll get!"

Jimmy *did* know and didn't want to get it. He exclaimed, "You're mean and nasty. I hate you. I hope your old fudge makes you sick," letting his feelings out in words. Then he banged the kitchen door behind him and ran out into the back yard to his loved mudhole. There he took great handfuls of mud and slammed it against the wooden wall. Stopping to outline a figure of a girl, which was obviously meant to be Helen, he slapped on mud with increasing fury, saying angrily, "I hope it does get into your stinky eyes and mouth and hair and all down inside you!"

As the process of catharsis continued, the extremity of Jimmie's anger gradually lessened and his creativity was released. His quickened mind soon saw that the mud was much like the fudge he craved. He proceeded to fill pie tins with it and then he patted it out in the pans and cut it crisscross with a kitchen knife until it looked for all the world like real pans of fudge. Just then the little girl next door came home from kindergarten and he called, "Come over, Carrie! Let's play we're having Bluebird meeting. I've been making fudge for it." This was meaningful to Carrie, whose older sister was a Bluebird, too, and she entered right into the play. They set up dolls and teddies as club members and passed them the "fudge."

Jimmy's opportunity for untrammelled but harmless release and for using materials creatively had value in turning the frustration energy to constructive use. Though Jimmy could not have put it into words, he

⁹ Taylor, Katharine W., *Parent Cooperative Nursery Schools* (New York: Teachers College, Columbia University, 1954), pp. 143-49.

learned that after one gets some of one's "madness" out in harmless ways, one can use the remaining energy in ways that are really fun for oneself and for one's friends. Also after just playing things out one doesn't have to suffer because of having made some one angry.

Improving the Emotional Environment

Before teachers (or parents) can improve the emotional environment for children, says Dr. William C. Menninger of the Menninger Foundation, "we must better understand ourselves, our own emotions and feelings, in short, our personalities."¹⁰ It is comparatively easy, he points out, to improve the physical surroundings for children, in school as well as at home—we can see that they get better medical care and have better schools and classrooms. But it is more difficult to do something about their emotional environment, "the environment we create by our behavior, our attitudes, and our actions." Our behavior as adults greatly determines our children's development. But what is personality?

First of all, your personality is the *total* you. It includes all your physical equipment—brains, bones, skin, organs, muscles, blood vessels, as well as your winning smile, Roman nose, and jutting chin. In addition, personality also includes your ideas, feelings, hopes, longings, loves, hates, friendships, interests. It's the way you use your body to express yourself, to transport yourself, to perceive, to feel.

Most people find it hard to think in terms of a "total" personality. They're used to thinking of themselves as made up of distinct and separate parts—a mind and a body. Actually what we call our mind and body are really one.

These two are so closely related that they cannot operate, or even be considered, separately. Your mind affects your body. Your physical condition affects your mental state. For example, when you get angry with your child (that's mental), your blood pressure (that's physical) goes up, and other changes occur in your body. When you're embarrassed (mental) by a friend's remark, you blush (physical). And when you have a toothache or headache (both physical) you can't feel gay or interested (both mental) no matter how happy other circumstances around you may be. In other words, your physical condition has affected your "frame of mind."

Dr. Menninger sums up the goals of emotional maturity for parents and teachers as follows:

You are emotionally mature to the extent that you find greater satisfac-

¹⁰ Menninger, William C., *Self-Understanding* (Chicago: Science Research Associates, 1951), p. 48.

tion in giving than in receiving; form satisfying and permanent loyalties in give-and-take relationships; use your leisure time creatively; contribute to the improvement of your home, school, community, nation and world; learn to profit from your mistakes and successes; are relatively free from fears, anxieties, and tensions.

How can classroom teachers help the emotionally disturbed child? Unfortunately, says Lois B. Murphy, there are no adhesive bandages guaranteed to take care of the hurt feelings of a child; ". . . each child's sorrow, frustration, disappointment, fear, is his own, and each must be understood, both in terms of its source and the unique ways which can really help the individual child."¹¹ Individual differences in sensitivity in the things that are disturbing, she says, are just as important as anything involving the physical:

Joan can take a lot of physical pain, but her feelings get deeply hurt if she feels neglected or misunderstood by someone she cares about; Tommy can defend his own ideas courageously, but he can't defend his property if some one takes it away.

Children show their disappointment, or crestfallen, heartbroken, angry feelings in different ways. . . . Cynthia never cried. But she retreated to the easel and there painted pictures covered over with masses of black or brown paint as doleful looking as her face. Esther by contrast would set her jaw and play out in the doll corner feelings of retaliation against the child or adult who had attacked or deprived her.

John can be comforted by calm reassurance from a grownup who takes time out to talk with him quietly, but talking does not reach Jennifer when a disappointment has brought her to the point of tears; only physical comfort, getting on to the lap of the teacher she loves, being soothed with strong consoling arms, can make her feel that it is worth while to pick up and start again.

Even if the child has the words, the emotional disturbance may put them out of reach, Dr. Murphy says. "We must take it for granted that with some children this loss of verbal resources under emotional stress will be greater than with other children." But children can be helped to help themselves in this fundamental matter of the emotions: "The sensitive and resourceful teacher watches to see 'what helps' each individual child and how the child tries to help himself, and uses his ability to reinforce the natural recuperative power that belongs to each child."

An investigator on the staff of the Intergroup Education Project

¹¹ Murphy, Lois B., "Emotional First Aid for the Young Child," *Childhood Education*, 32:205-07 (January, 1956).

of the American Council on Education began her inquiry into emotionally disturbed children with the following questions: *Are the group activities of a classroom beneficial or detrimental to the growth and development of these particular children? How can the classroom teacher select content, arrange program, and use techniques which provide for the needs of the "average" child, and which create an environment conducive to the proper adjustment of the disturbed child?*

First of all, says Miss Elkins, the teacher who conducted this investigation, "I had to find a way, not only of identifying who these children were, but also of determining a great deal about what things were causing the disturbance":

Here in front of me sat a class of over thirty youngsters. Some were noisy, others quiet; some smiled, others appeared sad; some talked all the time, others never said a word; some accepted new things confidently, others were filled with constant fears. That's what appeared on the surface. What about these children? This was their classroom for the rest of the year. This was the group of children each must work and play with for many weeks. What about this pupil society? Was it one in which each child could find a place for himself, in which learning would be facilitated for him, in which he would be comfortable? Was each child a member of the group? Did he fit in? Did he feel a sense of belonging? ¹²

Miss Elkins then tells how she went about to answer these questions. In order to determine the extent of acceptance and rejection within the pupil society of the classroom she administered a sociometric test, followed by interviews in which children explained their reasons for choice of others. Through this test she also discovered those children who were the leaders of this child society. She also found many leads which helped to identify the causes of disturbances in children. One child was rejected by the others because "she's babyish; she hits the kids; she's like a little sister or brother—pestering all the time." Following up such a lead, Miss Elkins says, often provided tangible evidence of reasons for children's disturbances. Next, children wrote compositions in answer to open questions. They also kept diaries for two-day periods. Then sociodrama was used for dis-

¹² Elkins, Deborah, "How the Classroom Teacher Can Help the Emotionally Disturbed Child," *Understanding the Child*, 20:66-73 (June, 1951). See, also, H. Taba and D. Elkins, *With Focus on Human Relations*, and H. H. Jennings, *Sociometry in Group Relations*, both published by the American Council on Education.

covering the predicaments of the youngsters; and interviews with parents were utilized, sometimes leading to the revelation that "some children experienced little affection or security at home."

Every classroom has a "feeling tone," Dr. L. Thomas Hopkins asserts.¹³ Describing the possibilities of classroom climate for promoting creativeness he says that if each person in the room is to have "release for his inner meanings" he must emotionally believe that he is *wanted* as a member, that he has qualities which the others accept, that he is and can be different from others, yet work with them mutually and cooperatively, that he has a right to grow up as his unique self, and that every person is helping him to develop all of his emergent possibilities as he is helping all others to do the same. "This feeling tone," says Dr. Hopkins, "has been described in such words as *belongingness*, *wantedness*, *security*, *status*." These qualities are difficult to define verbally, he says, but they are as certain to affect members of the group as the air they breathe.

What do we do about this "feeling tone"? First, says Dr. Hopkins, the teacher must help the group to remove all fears, threats, and external demands from authoritarian experiences which keep the emotional tension too high for mutual interactive responsiveness:

These fears are inside the teachers and children as value judgments from past experiences and are tendencies to action in present situations. They must be brought out in the open and reinterpreted on a more thoughtful basis. Once understood the tensions which surround them can be relieved while internal strength is being developed.

The educational problem, as Hopkins sees it, is whether teachers will merely continue traditional classroom conditions, or try to reorganize them around the modern evidence of growth, learning, and self-development. "Classrooms should furnish the emotional tone, the basic experiences and the emergent intelligence through which each person, including the teacher, can continue his development."

Emotion is at the very basis of modern education, an essential element in "the adjustive nature of the life process." John Dewey was convinced, Professor Childs reminds us, "that we shall attain a better understanding of such basic phenomena as human emotion, esthetic appreciation, purposeful activity, and reflective thought when we

¹³ Hopkins, L. T., "Classroom Climate Can Promote Creativeness." *Educational Leadership*, 13:279-282 (February, 1956).

learn to view them from the perspective of the adjustive nature of the life process.”¹⁴ It is Dewey’s concept of “experience,” Childs points out, that has had such profound implications for the way in which we of today view the education of the young:

It indicates why the pragmatists have wanted a school so organized that the immature would not be confined to learning from books, but would also have opportunity to learn through their own direct interactions with the world of things and persons. Learning from books and through symbols is critically important, but it takes place with maximum result when it is associated with primary experiences of doing and understanding—of action and feeling.

Modern education has been profoundly influenced by such psychologists and philosophers as William James and John Dewey, and the “new education” or “progressive education,” as it has been called at various times and in different parts of the world, has been attacked from various quarters. Dr. Childs says:

These very attacks are further evidence that its analysis and its program have evoked a positive response. . . . Some of these attacks have real merit and call attention to difficulties in the theory and practice of the new education that require careful attention. But many attacks come from groups who perceive correctly that the experimental and democratic orientation of pragmatism puts in jeopardy patterns of thought and behavior which they desire to maintain. Defenders of the laissez-faire American economy, for example, are properly disturbed about the conviction of the pragmatists that in our independent, industrial society the preservation of democratic values calls for the development of a system of cooperative planning. Narrow nationalists are also correct in their recognition that the tendency of the new education is to supplant the attempt to gain security through a program of American self-sufficiency by a program of security through collective, international arrangements and commitments. White feudalists manifest a sound instinct when they fear that the pragmatic program of education which is as color-blind as the Declaration of Independence and the Constitution of the United States will endanger historic patterns of segregation and discrimination in our culture.

Realization that emotions are “the most powerful forces in our primitive natures” has led workers in other agencies besides schools to be concerned about the positive educational possibilities. A recent writer on nursing education notes that “the emotional conflicts which beset us from time to time in the course of our lives can play a valu-

¹⁴ Childs, John L., *American Pragmatism and Education* (New York: Henry Holt and Company, 1956).

able part in developing our character, if we have the courage to try to be sincere with ourselves, to exercise self-discipline and to forego self-gratification sufficiently to serve our fellows and play a useful part in the world.”¹⁵ And a bulletin from one of our largest life insurance companies, in answer to the question, “How can the school and the home cooperate to promote and develop emotional health?” says:

A great deal has been learned in recent years about the phases of emotional development through which the child passes before physical maturity is reached. A baby is helpless. He is born with no capacity to give; he can only receive. He is wholly dependent upon others to meet his needs. His voice is the only means he possesses for making his wants known. At first he has no awareness of the outside world. He knows only that his vocal organs get satisfactory results. Next he identifies the good things he wants with their source. His mother means food, warmth, and protection. It is when his signals fail to work that he becomes aware of some one other than himself—some one who can satisfy his hunger or ignore it—some one whom he is powerless to control. This frightens him and angers him. With one kind of emotional constitution he may accept his helplessness passively—cry a little and then go to sleep until he is fed. With another he may rage until he is too exhausted to eat when the time for feeding comes. As a result of his uncontrolled emotional responses to frustration a bad pattern of hunger, fear, and continuing hunger may start to develop. Such early patterns—whether good or bad—may be the ones he continues to follow. That is why it is so important to guide the child into good emotional responses which will help him to learn to bear frustration and the postponement of gratification. To do this he must be assured of love and security, and the demand on him must be wise and imposed gradually.¹⁶

“The educational system is ready now to include programs for the promotion of healthy emotional development as part of the regular curriculum,” declares the Committee on Preventive Psychiatry of the Group for Advancement of Psychiatry.¹⁷ Because the early life experiences of the child are so important for healthy development of his personality, this GAP report says, certain effective mental health programs may well begin with parents, educators, and all those responsible for the training of the child. Indeed, says the Committee,

¹⁵ Odium, Doris M., *Psychology, the Nurse, and the Patient* (New York: Philosophical Library, 1954), p. 168.

¹⁶ School Health Bureau, Metropolitan Life Insurance Company, *Health Bulletin for Teachers*, 32:1 (November, 1950).

¹⁷ Report No. 18 (January, 1951).

"an ideal area is available in the primary and secondary schools." The report points out that with respect to early detection and treatment of deviant behavior in school children the help of the psychiatrists has been utilized to a considerable extent. A second area, says the report, in which the psychiatrist can be helpful is in the training of the teacher, either in student days, or afterward as an in-service function:

By active participation the psychiatrists may help the teacher to extend his insight into human growth, development, and the varieties of behavior; to include understanding and appreciation of the multiple causes of behavior; and thus encourage him to apply this knowledge in his relations with the school child. Conflicts between teacher and his pupils lessen as the teacher acquires more understanding. With better understanding he becomes more capable of appreciating and handling the problems of the child. . . . In turn the behavior of the child changes and a more desirable relationship develops.

Reading Readiness

Emotional readiness for reading is emphasized by most modern authorities. "A child must be emotionally ready to read," says Harrison Bullock in one of the more recent studies in this field.¹⁸ "He must feel that reading will contribute to his emotional needs, and must have no emotional stake in not learning to read, such as expressing hostility to a parent or teacher by demonstrating that 'you can lead a child to reading, but you can't make him read.' He cannot attend to the difficult task of learning to read if preoccupied with problems of insecurity at home or at school."

Especially important, as Bullock and others have pointed out, is emotional readiness to read when a child first enters school:

As time goes on and a child experiences failure and frustration in learning, emotional reactions to these unpleasant experiences make emotional readiness even more difficult to achieve. That is why the non-reading pupil in the secondary school presents such a difficult problem in remedial reading.

Reading disability often results from emotional disturbance of one sort or another, Bullock says: "Emotional disturbance almost certainly results from reading disability which continues well into ado-

¹⁸ Bullock, Harrison, *Helping the Non-Reading Pupil in the Secondary School* (New York: Teachers College, Columbia University, 1956), p. 180.

lence. Remedial classes, therefore, have more than their share of emotionally unstable pupils."

Kenneth

"I hate reading" is a cry not infrequently heard in the elementary school. Here is one teacher's story of Kenneth:

Kenneth was 15.6 years of age when he was referred to me. He was then in the graduating class but had little chance of receiving a diploma with his fellows. His record had been poor throughout school, with frequent retardations. He had been an habitual truant for years, and when forced to attend became a disruptive element in the classroom, so that he became a frequent visitor to the principal's office. Kenneth's parents were separated; his father seemed to have little or no interest in his welfare; his mother was a nervous, fluttery woman who wept copiously and sighed that she just couldn't understand this only child of hers, to whom she had been so good, who was now disgracing her, and so on. Kenneth sat through these outbursts silently, evincing nothing but boredom. Eventually his behavior brought him under the care of a social agency where Kenneth one day exploded, "I don't want to go to school. I've never been able to read as good as the others!"

The social worker felt it was of the utmost importance that Kenneth graduate, if that were at all possible. All attempts by his teachers to give him so-called "remedial assistance" via the usual phonic methods had not only failed, but seemed to have increased his hostility and resistance to learning. Hence, after conferences between the social worker, Kenneth's teacher and principal, he was brought to me for "remedial reading with a psychiatric slant" (whatever that may mean!). Kenneth's father agreed to pay for my services only after he had been warned that Kenneth was probably headed for jail unless he could be changed.

For our first session Kenneth presented himself ten minutes late, muttering something about "taking a wrong bus." He was a tall lad, with the beginnings of a blond beard that contrasted with a soft, pursed, babyish mouth. He was carelessly dressed, no tie, hair tousled. At first he was most incommunicative. I'd get a short "Yup" or "Nope" (mostly "Nope") in response to my efforts to engage him in conversation. It ran something like this:

Did he have any hobbies, anything he liked to do? Nope.

Any friends at school? Nope.

Outside school? Nope.

How come? Aw, they were only "kids" who were interested in football and baseball.

And he, did he like sports? Nope.

How about the older boys in the neighborhood? Aw, they were always chasing after girls. He didn't like girls.

Anything about the school he liked, like gym or shop? Any teacher he'd liked? Nope.

Hmm! Well, when he was truant from school, what did he like to do? A long pause, during which he was apparently deciding whether or not to trust me. Then—if he felt the fireman wouldn't "squall" on him, he liked to look around the fire house.

Oh! What did he like, the engines? Nope, the pump and hose. But most of all the fire extinguishers (a smile, and first expression of animation).

Here was the jumping off place. I readily admitted my comparative ignorance about fire extinguishers, and at my suggestion he drew an excellent diagram of an extinguisher. Under his guidance I printed labels for the various parts as he named them—and Kenneth was reading! At the end of the first session I asked if he'd like to take the diagram along to show his teacher. Oh, no, she wasn't interested in him (bitterly).

From then on we discussed different types of extinguishers, collected pictures, advertisements, etc. Kenneth knew a surprising amount about all this. We progressed to stories which I wrote at Kenneth's dictation. He was soon reading his own stories fluently, and "polishing" them by substituting words and phrases gave good vocabulary training. Next, I introduced whatever material I could locate in books or workbooks which were on his level and which would interest him. I also presented some simple phonic help for attacking new words.

Not the entire hour was spent on reading per se, for the personality angle was of even more importance. Naturally, it was not possible to do any deep therapy, nor was that my role. However, it was important to help him over the bumps. At the beginning of each hour I inquired quite casually how school had gone. I encouraged him to discuss any problem that bothered him and to air his grievances. I tried to show that we were concerned with his welfare, all of us: the social worker, his teacher (struggling with 39 others), his principal who was giving him such an opportunity to graduate, his parents in their fashion, and of course I was rooting for him most strongly.

In the beginning, Kenneth's attendance was spotty and his mother would call to sob that she couldn't get him to go. However, I fanned every spark of confidence that I could engender, and as his interest and feeling of accomplishment grew he came regularly, even in snowy weather. His appearance improved, and his mother happily told me that he "spruced up" when he was to come to me. Kenneth progressed nicely. His truancy stopped, and he was graduated with his classmates. I attended the graduation exercises at Kenneth's own request. He planned to go on to Vocational School for machine shop training (probably to manufacture fire extinguishers!).¹⁹

The traditional subject of spelling enters definitely into the emo-

¹⁹ Greenblat, Helen J., "I Hate Reading!" *Understanding the Child*, 21:78-8 (June, 1952).

tional picture. In a study of spelling disability Dr. Edward H. Knight found that educational deficiencies in this area could be readily understood in some cases as expressions of emotional disturbance.²⁰ He notes, however, that this does not explain the dynamics behind the specific selection, in symptom formation, of one aspect of the learning process. "This is the problem we face," he says, "in attempting to understand the psychological meaning of spelling in those individuals afflicted with the intractable 'special disability.'" In summarizing the case he reported on, Dr. Knight says:

We might say that the symptom of spelling disability was peculiarly suited to this patient's psychological needs. There is genetic evidence that spelling had, very early in life, come to mean a great deal in terms of his relations to his parents. In childhood it was a way of pleasing and being like his mother. Loss of the function epitomized deep craving for dependent gratification of the sort once supplied by her. In addition, spelling proficiency was a way of excelling his arch rival—father—for his mother's affections. As such it was symbolically an expression of aggression toward his father.

The specificity of this symptom, Dr. Knight points out, was clearly demonstrated by the patient's high performance in other areas—he made one of the highest scores possible on the General Educational Development high school tests in every area except spelling, in which he failed miserably.

Schools and Personality Development

What are the school's potentialities for furthering the healthy personality development of children? What is the school's role—whether it is a public, private, or parochial school—in relation to other influences in the life of the child? What is the school's special function, if any?

In an effort to answer these questions the report of the Midcentury White House Conference says:

If it were true that the personality is set in the very early years of life, the school would be powerless in relation to it. But whereas there is much evidence to the effect that the very early years are of major importance, there is also evidence that crucial phases of development occur during the years that follow.

In this development sequence the school surely has opportunity to in-

²⁰ Knight, Edward H., "Spelling Possibility as a Symptom of Emotional Disorder," *Bulletin of the Menninger Clinic*, 16:84-91 (May, 1952).

fluence personality in vastly significant ways, and there are many who believe that in contemporary society these steps in growth can be successfully negotiated only through propitious school experience. It is perhaps needless to point out that school experience can also either enhance or undermine whatever basic sense of trust, of independence, and of initiative the child brings with him from his earlier life at home.

Moreover, if the school's major function, in contradistinction to that of other institutions, is taken to be that of enabling the young to understand their world and to come creatively to grips with it, then the school has a role which is not only strategic but indispensable in the development of the healthy personality.²¹

That the teacher is perhaps the most important emotional health factor in the school environment was the conclusion reached by a national committee on school health policies in 1954.²² The child's emotional health reflects his experiences at home, in the school, and in the community, says the committee. "It is important that the teacher understand the developmental needs and interests of children and the experiences which they have outside of school. The teacher or principal who shows concern for each child, and who is kind, firm, understanding, consistent, and friendly, exerts a beneficial influence on emotional health. Nagging, scolding, sarcasm, domination, or emotional instability can seriously injure the emotional health of children."

One very real task teachers have is to counteract the effects of an emotionally unwholesome home or community environment. Indeed, "the teacher's acceptance of a youngster thus handicapped emotionally may be the child's 'first experience of being wanted,'" says the *Health Bulletin for Teachers*:

It may not be easy for a teacher to accept a child whose standards conflict sharply with her own ego ideal. For the time being, however, she must accept him as he is. She cannot destroy standards which are part and parcel of the child's superego and represent the only inner security he may possess. But she can help him to develop an ego ideal strong enough to overcome the guilt and anxiety caused by conflict between powerful instinctual drives or repressed impulses and "the thousand several tongues of conscience condemning him for a villain." Through her own emotional stability, warm friendliness, fairness, and sense of humor she may do much to counteract the emotional instability and the antagonism

²¹ Witmer, H. L., and R. Kotinsky, eds., *Personality in the Making* (New York: Harper & Bros., 1952).

²² *Suggested School Health Policies* (Washington, D.C.: National Education Association, 1954).

toward authority mirrored in the behavior of children who have been dealt with inconsistently or without affection and understanding.²³

Lane and Beauchamp give examples out of everyday school experience:

Susan came to school this morning without breakfast. Her dress is dirty, her shoes worn thin. She lives in one room with her three brothers, two sisters, and mother. Susan hasn't seen her father for six weeks. He will put in an appearance some night soon. He is likely to be drunk, give the kids a cuff, and demand his rights as head of the house. Living for Susan is a matter of getting there first and grabbing her share of whatever the mother is able to provide. She has become skilled in dodging the outstretched hand; she has learned it nearly always brings pain. Susan wants desperately to be needed, to be valued because she is Susan, but she doesn't know how to seek valuing. She has learned to distrust adults, to expect punishment.

John pleaded sick this morning in faint hope of staying home from school. Last night there was a family row over his report card, which stated that he was not working up to his capacity and that he tormented the small boys. John's father, a vice-president of the small town bank, wants his son to carry on in the family tradition. His son must do better than the children of his colleagues. All his life John's father has given him so much that he hasn't had to ask for or want things, nor has he had to share with others. The last words John heard as he slammed the front door behind him were, "You bring your books home so I can help you with your homework tonight." As John feels it now, living is a heavy hand pressing down harder and harder and a sick feeling inside that he can't measure up to what his dad expects and demands of him.

Ed came into the room with two other boys. A good-looking lad whom the teacher describes as a "sweet kid," he has lots of friends, many interests, and a fine set of parents. The neighbors are glad Ed's folks live in the block. He is fun-loving, generous, and learns easily. He likes people and they like him. The routines of the schoolroom go along better when Ed is in the group. His teacher says, "I enjoy Ed. He's such a good kid. I'll remember him a long time."

Louise, unlike Ed, walked to school alone this morning as she has done every morning since moving into this new neighborhood. She is an attractive Puerto Rican girl whose parents have recently moved to a suburban community. The neighbors have not dropped in to see the newly arrived family, nor do they speak when they meet on the street. Louise is puzzled and hurt. She had so many friends in her old home. Living would be so nice out here if only she had some friends. Why don't the girls like her? Why do the boys eye her in a way that makes her uneasy? She finds it

²³ New York, Metropolitan Life Insurance Company, School Health Bureau (November, 1950).

hard to think about her school work because that lump keeps sticking in her throat.²⁴

Workshops in which teachers have the help of psychiatrists and other specialists have been increasingly used to develop understanding of emotional problems. One such workshop, for example, held in Cleveland, Ohio, had to do with "what the teacher should know about personality disorders, educational changes for better emotional health, and discipline and emotional health."²⁵ Topics discussed included (1) the shy personality—over-studious, docile, withdrawing, unhappy, depressed, stuttering, inferiority types; (2) the aggressive personality—bullying, domineering, overexcitable, emotionally uncontrolled, antagonistic, negativistic, quarreling; (3) sex offenders; (4) anti-social personality—stealing, lying, destructiveness; (5) school maladjustment due to "poor accomplishment in comparison with known ability." Basic emotional needs were summed up as follows: "The need to be loved, to feel wanted, the need for a sense of security—these to be met in the school as well as in the home"; "pride in self-respect without egotism"—every child to have some feeling of satisfaction, of achievement, "in every class every day." And the report of the workshop concludes: "Difficult as it is, painful as it must be at times, we can all profit by being objective with ourselves in the exploration of our emotions whenever they seem to be interfering with our lives."

Teachers and Emotions

Teachers themselves have emotional problems, of course. Many of the teachers studied by Jersild²⁶ were disturbed by their own hostile tendencies—tendencies, Jersild points out, that prevail in the lives of every one. Closely related to the problem of "coming to terms with hostility," he says, is an even larger concern which many of the teachers expressed—a concern about emotion in general:

Many expressed a desire for insight that might enable them to draw more freely upon their feelings, or might enable them to know what their

²⁴ Lane, Howard, and Mary Beauchamp, *Helping Children Grow* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955), p. 353.

²⁵ Gebhard, Bruno, *Discipline and Mental Health* (Cleveland: Cleveland Health Museum, 1950), p. 22.

²⁶ Jersild, Arthur T., *When Teachers Face Themselves* (New York: Teachers College, Columbia University, 1955), p. 169.

real feelings were. Freedom to think is a perennial issue in academic life, but an even more significant issue in the lives of many is freedom to feel; freedom to allow feelings to surge within themselves without being compelled to snuff it out and deny it; freedom to experience the full impact of fear (and who is not afraid?); of hate (who is not swayed by it?); of joy (what person does not have some capacity for it?); of compassion (who does not own a rich potential store?).

Other concerns of the teachers included "the burden of conformity," under which many labor (in the name of being sensible and socially well-adjusted); the oppressive load imposed by "striving to live up to an impossible ideal,"—a kind of striving, Jersild says, that some educators cultivate as though it were a virtue; the difficulty many teachers have in "being themselves" when dealing with some one who wields authority or who is, to them, a symbol of authority; and the concerns many have in the sphere of sex.

That classroom teachers are increasingly concerned with mental and emotional health of both themselves and their children is evident from such statements as those prepared by groups of teachers in professional organizations who studied the role of the teacher in the school health program for the National Conference on Cooperation in Health Education.²⁷ In reporting on "building for emotional ability," for example, the teachers urge (1) reducing pressure of school marks and tests; (2) removing unhealthy competition and unnecessary regimentation; (3) varying the work during the day; (4) emphasizing health needs rather than "perfect attendance"; (5) developing a guidance plan to deal with emotional problems; (6) allowing for individual differences in susceptibility to fatigue, attention span, poise, and so forth. The teachers ask for "friendly cooperation with parents," meetings with parents to discuss children's needs, and contacts with recreational and other agencies affecting the emotional stability of children and youth. They call not only for teaching procedures that will further the children's mental health, but also for measures that will promote the mental and emotional health of teachers—varied social contacts with people in the community other than teachers; having hobbies; travelling; and "development of a philosophy of life that will bring peace of mind and a proud, creative attitude toward one's work."

²⁷ *Understanding the Child* (January, 1949), an editorial.

Opportunity for emotional growth can, of course, be a real challenge:

Children particularly gain great personal satisfaction when they discover abilities that may be used toward achievement. A teacher or parent who helped a child feel strong and competent by encouraging emotional growth is demonstrating understanding behavior. This means that the adult must adapt requirements to the emotional needs of individual children.

Some children are too good, too obedient, and too conscientious. For these children, emotional growth would consist of letting self interests and ideas gain expression. Other children may be so spontaneous in expressing their own interests and ideas that they will need to learn to respond to ideas and plans developed by others. Still others may need to grow emotionally by assuming responsibility for carrying through a plan of interest to them.

The major goal of emotional growth is to challenge children to develop balance between energy expended in following self interests, meeting requirements of reality, and developing sound value concepts in interpersonal relations.²⁸

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • What do you understand by "emotional climate"? Describe the emotional climate of school and college classrooms you have known.
- 2 • If the ideas set forth about "emotions" in this chapter are different from those to which you are accustomed, indicate in what respect they differ.
- 3 • What practical aspects, if any, do you see in the statement from the UNESCO report that "learning in the strictly educational sense will not proceed satisfactorily if the child's emotional life is disturbed"?
- 4 • Reread carefully the quotation from Jersild on pages 353-354. Do you agree with his statement about "boredom" in school? If so, what would you as a teacher try to do about it in your own classroom and elsewhere in the school situation?
- 5 • What do you understand by the term "depth psychology"? Do you see any practical values in it for your own teaching?
- 6 • Do you accept Eva Knox Evans' statement that the fundamental approach to emotional behavior is "to try to understand the cause"?

²⁸ Driscoll, Gertrude. *Child Guidance in the Classroom* (New York: Teachers College, Columbia University, 1955).

- 7 • Does the case of Jimmie, cited by Dr. Taylor (p. 340), appear to you to have any practical applications for teaching? Specify.
- 8 • In the situation described by Miss Elkins (p. 343), would you consider the method she used of practical value in teaching situations as you know them?
- 9 • Could you cite from your own experience any cases like that of Kenneth and his reading? Was this a practical procedure? Is it fair to other children for teachers to spend considerable time with one child in a large class?
- 10 • Do you accept Gertrude Driscoll's statement that "some children are too good, too obedient, and too conscientious"? What would you do if you found such cases in your own experience?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Bernard, H. W., *Mental Hygiene for Classroom Teachers*. New York: McGraw-Hill Book Co., 1952.
- Bruce, William F., and A. John Holden, Jr., *The Teacher's Personal Development*. New York: Henry Holt, 1957.
- Bühler, C., et al., *Childhood Problems and the Teacher*. New York: Henry Holt, 1952.
- Bush, R. N., *The Teacher-Pupil Relationship*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954.
- Caner, G. C., *It's How You Take It*. New York: Coward-McCann, 1946.
- Carmichael, L., *Manual of Child Psychology*. New York: John Wiley & Sons, 1954.
- Carroll, H. A., *Mental Hygiene: The Dynamics of Adjustment*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1947.
- Cole, L., *Psychology and Adolescence*. New York: Rinehart, 1954.
- Commission on Teacher Education, *Helping Teachers Understand Children*. Washington, D.C.: American Council on Education, 1945.
- Creating a Good Environment for Learning*, Association for Supervision and Curriculum Development. Washington, D.C.: National Education Association, 1954.
- Cronbach, L. J., *Educational Psychology*. New York: Harcourt, Brace & Co., 1954.
- Crow, L. D., and A. Crow, *Human Development and Learning*. New York: American Book Company, 1956.
- Cunningham, R., and associates, *Understanding Group Behavior of Boys and Girls*. New York: Teachers College, Columbia University, 1951.
- Despert, J. L., *Children of Divorce*. Garden City, N.Y.: Doubleday & Company, 1953.

- Driscoll, G. P., *Child Guidance in the Classroom*. New York: Teachers College, Columbia University, 1955.
- English, O. S., and S. M. Finch, *Emotional Problems of Growing Up*. Chicago: Science Research Associates, 1951.
- Frank, L. K., *Feelings and Emotions*. Garden City, N.Y.: Doubleday & Co., 1954.
- Heaton, M. M., *Feelings Are Facts*. New York: National Conference of Christians and Jews, 1953.
- Hopkins, L. T., *The Emerging Self in School and Home*. New York: Harper & Bros., 1954.
- Hurlock, Elizabeth B., *Child Development*. New York: McGraw-Hill Book Co., 1956.
- Hymes, J. L., Jr., *A Child Development Point of View*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- , *A Pound of Prevention*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954.
- Jersild, A. T., *Education for Self-Understanding*. New York: Teachers College, Columbia University, 1953.
- , *When Teachers Face Themselves*. New York: Teachers College, Columbia University, 1953.
- Keliher, A. V., *Life and Growth*. New York: D. Appleton-Century Company, 1938.
- Lane, H., and M. Beauchamp, *Helping Children Grow*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- Lindborg, L., *The Democratic Classroom*. New York: Teachers College, Columbia University, 1954.
- Lindgren, H. C., *Educational Psychology in the Classroom*. New York: John W. Wiley and Sons, 1956.
- Lippman, H. S., *Treatment of the Child in Emotional Conflict*. New York: McGraw-Hill Book Co., 1956.
- Martin, W. E., and C. B. Stendler, *Child Development*. New York: Harcourt, Brace and Co., 1953.
- Menninger, W. C., *Understanding Yourself*. Chicago: Science Research Associates, 1948.
- Midcentury White House Conference on Children and Youth, *Children and Youth at the Midcentury*. Raleigh, North Carolina: Health Publications Institute, 1950.
- Moustakas, Clark E., *The Teacher and the Child*. New York: McGraw-Hill Book Co., 1956.
- Murphy, L. B., and associates, *Personality in Young Children*. New York: Basic Books, 1956.
- Ojemann, R. H., *Personality Adjustment of Individual Children*. Washington, D.C.: National Education Association, 1954.

- Olsen, W. C., and J. Llewellyn, *How Children Grow and Develop*. Chicago: Science Research Associates, 1953.
- Prescott, D. A., *Emotion and the Educative Process*. Washington, D.C.: American Council on Education, 1938.
- School Psychologists at Midcentury*. Washington, D.C.: American Psychological Association, 1955.
- Segel, D., *Frustration in Adolescent Youth*, Office of Education Bulletin, No. 1. Washington, D.C.: U.S. Government Printing Office, 1951.
- Teachers for a Free People*. Ononta, N.Y.: American Association of Colleges of Teacher Education, 1956.
- U.S. Department of Health, Education, and Welfare, *The Adolescent in Your Family*, Children's Bureau Publication, No. 354. Washington, D.C.: U.S. Government Printing Office, 1954.
- Wheatley, G. M., and G. T. Hallock, *Health Observations of School Children*. New York: McGraw-Hill Book Co., 1956.

PERIODICALS

- Childhood Education*, Association for Childhood Education International, 1200 Fifteenth Street, N.W., Washington 5, D.C.
- Children*, U.S. Children's Bureau, Department of Health, Education, and Welfare, Washington 6, D.C.
- Child Study*, Child Study Association of America, 132 E. 74th Street, New York 21, N.Y.
- Educational Leadership*, Association for Supervision and Curriculum Development, 1201 Sixteenth Street, N.W., Washington 6, D.C.
- School Life*, U.S. Office of Education, Department of Health, Education, and Welfare, Washington, D.C.
- Understanding the Child*, National Association for Mental Health, 10 Columbus Circle, New York 19, N.Y.

14

SOCIAL ADJUSTMENT AND CONDUCT DISORDERS

In the preceding chapter attention was centered on the emotions as of fundamental concern in a well ordered and adjusted plan of human living. This positive and constructive approach is of special importance to teachers and other educational workers. It indicates the hopeful view that psychologists and other students of personality on the whole take with regard to the possibilities as well as the weaknesses and abnormalities of human beings.

It is necessary, however, to examine some of the evidences of maladjustment in cases where, for one cause or another, or for a variety of causes, human beings—and specifically children and youth of school age—have failed to make even a reasonably successful emotional and social adjustment to everyday living.

Juvenile Delinquency

Juvenile delinquency is one of the most serious problems of our time.

How many young people are delinquent? According to estimates of the Children's Bureau, U.S. Department of Health, Education, and Welfare, some 500,000 boys and girls were brought to the attention of the juvenile courts in the United States in 1955 because of delinquent behavior.¹ The Federal Bureau of Investigation Uniform Crime Report shows an increase of 11.4 per cent in police arrests of young

¹ Reports from 1,551 city police departments for 1956, whose population includes over 41 million persons or 46 per cent of the urban population of the United States, show that 234,474 arrests were made of persons under 18 years of age. The Children's Bureau estimates that roughly 2 per cent of the 20,000,000 children in the country aged 10 through 17 were referred to juvenile courts in delinquency cases in 1956.

persons under 18 in 1955, as compared with 1954.² A much greater number than was estimated above—more than one and a third million—were dealt with by the police in the same year. The government report adds: "A great many delinquent children undoubtedly escape the attention of the law. The number of these 'hidden' delinquents is not definitely known, but studies indicate that it is considerable."

Is the number of delinquents increasing? The Children's Bureau says that the number of children appearing as delinquents before juvenile courts increased 58 per cent between 1948 and 1954, and that this percentage increase was more than four times as great as the percentage increase in child population 10 to 17 years of age for the same period. "The prospect for the future is even more serious," says the Children's Bureau, pointing out that according to Census estimates there will be nearly 50 per cent more boys and girls in the 10 to 17 age group in 1965 than there were in 1954. Moreover, training facilities are not adequate. Many training schools are too large, the Bureau says, and few training schools have the staff to offer a genuine treatment program. "They need mature and experienced cottage supervisors and professional personnel drawn from the fields of social work, psychology, and psychiatry. Less than two-fifths of our State public training schools have a psychiatrist on their staff, either on a full or part-time basis. More than a third of the schools do not even have a social worker on the staff."³

What causes delinquency?

In an attempt to answer the question the Children's Bureau tells the story of Jimmie Smith:

Jimmie Smith is in trouble again. He and Tom Kelly and that Taglione kid. They were caught stripping tires off a sports roadster.

They "borrowed" it at first just to go for a ride. That was Jimmie's idea when he spotted the key in the ignition. Served the fool owner right for leaving it there. The stripping came later—after they had stopped off at the chili parlor for a hamburger and Peter Taglione had bragged to the big fellows how they'd done 70 and whipped around corners and scared the women pop-eyed. Jimmy was going to drive the car back as soon as he hit the jackpot on the slot machine. The big fellows thought that was goofy. Supposing the cops spotted him on the way back? No use taking

² For 1,160 cities which reported both in 1955 and 1956, the arrests of young people under 18 increased 17.3 per cent in 1956 over 1955.

³ Statement of May 20, 1956 (mimeographed). Also: *Some Facts About Juvenile Delinquency*, Children's Bureau Publication No. 340, revised 1955.

chances. White-walled tires were worth plenty. Knifey Joe knew a guy who would buy them. He'd show the kids where—for a cut on the deal. Jimmy was a little leary at the idea at first. Knifey sneered, "G'wan home, punk. Don't be a sucker." Jimmy was convinced.

But the cops pulled up and nabbed Jimmy before he even had the first tire off. Peter ran, but he didn't get far with that gimpy leg. Tommy stood still and gave himself up without a struggle. Seemed like, for a second, he was glad to get caught.

It looks like the "reform school" for Jimmy. It's his fourth time in juvenile court. And after the "reform school". . . . ?

Jimmy's a handsome lad, going on 16 and big for his age. He might have made a good tackle on the high-school team. That is, if he had ever reached high school. Jimmy quit grammar school in the eighth grade. It was against the law, but the school was glad to be rid of him. He only made trouble, anyway.

Jimmy had hated school from the day he began, and he started to play hookey almost at once. Not that he wasn't bright. There wasn't a smarter kid in the neighborhood, but for such a restless, active boy sitting in a seat all day reading about lambs and fairies and trips to the country was more than he could stand. And later having to learn about the inches of rainfall in Tibet and how many gallons of paint it takes to paint a house! Heck, who wanted to know about that anyway? His old man had once been a painter, and where had it gotten him? A bad lung, out of work, drunk most of the time.

Besides, Jimmy never liked his teachers. They were always scolding him. There was one in the fifth grade who was nice. She was young and seemed to understand him. She made him monitor and let him help her with the blackboard. When she found him playing with an airplane model he had made instead of studying his grammar, she didn't holler and send him to the principal. She kept him after school and talked to him about airplanes and how he could join a group at the church where the boys learned to make different kinds of models. He didn't say anything, but he knew he wouldn't go. Only sissies went there—and besides the stuff cost money. Jimmy didn't skip school once that year.

But that teacher was transferred, and the next one was a sourpuss. His big brother, Jack, whom Jimmy adored, had been in her room long ago and had made her life miserable. When Jimmy started "acting up" in class, she said he was no good and would end up in the penitentiary just like his brother. Jimmy quit after that and wouldn't go back until the truant officer found him one day hanging around the railroad tracks and took him to "Juvenile." They kept him in the detention home two weeks. A lot of doctors asked him fool questions and made him play with blocks. They told the judge he needed supervision and something they called "a good relationship." After that the probation officer came around once in a while to check up on how he was behaving and warn him to be "a good boy."

After Jimmy left school, he bummed around a bit. Made an occasional dollar delivering orders for the corner liquor store and directing guys to Mamie's joint. Sometimes he would pick up a good tip on the races hanging around the back of the cigar store.

Jimmy ran away to another city and tried to enlist in the army, but the recruiting officer found out how young he was and wouldn't accept him. He hung around the strange city, sleeping in the subway and snitching food. But the police picked him up one day, and the Travelers' Aid arranged a ticket back home. After that he was itching more than ever "to do something," but he didn't know what. He got into more fights all the time. It was shortly after this that he and Tommy and Pete stole the roadster.

The probation officer said it was all Jimmy's father's fault. Getting drunk on pay days—when he was working—and beating up his wife and kids. Jimmy had hated his "old man" ever since he could remember. His first memory was of getting kicked by his father.

Some people were inclined to blame the mother. She was a poor housekeeper and didn't budget the family income wisely. (But how can you keep a good house with rooms so small and dark that you gave up trying, with your back always ailing, and a new baby every year, and never enough money to stretch out the week?) The neighbors whispered that sometimes Mrs. Smith took a swig herself—but you know how neighbors talk. They said she didn't look after her kids right. There was Lola, only 17, with her high heels and mascara, running around with the boys since she started grammar school. Lately she'd been working as a waitress at the tavern near the steel plant. She told Mrs. Brown's girl that she spent last weekend with a boy friend in a hotel.

In court Mrs. Smith pleaded that her Jimmy wasn't a bad boy. It was that terrible neighborhood they lived in and the kids he ran around with from the time he was small. When he was only five they taught him to snitch bananas from the fruit man and take stuff from the 10-cent store. They'd knock over a push cart or strip brass from an abandoned building. He really didn't do these things to be mean. It was just that he had a lot of energy and no place to use it right. When he started to "get into real trouble," his mother would scold him and pray over him. Sometimes she would tell his father. Mostly, though, she hated to do that because he'd beat Jimmy up so bad. She didn't know what to do. It had been the same way with Jack. And Lola. For all she tried, nothing seemed to go right with her kids.⁴

Jimmy, the Children's Bureau points out, is just one of the thousands of children who pass through the juvenile courts every year and are labeled "delinquent." Most of these boys, the Government report says, are charged with "stealing" and "acts of carelessness and mis-

⁴ *Understanding Juvenile Delinquency*, Children's Bureau Publication 300, (Washington, D.C.: U. S. Department of Health, Education, and Welfare, 1951).

chief"; the girls (about one out of every five youngsters brought before the juvenile court is a girl) with "running away," "being ungovernable," and "sex offenses." They range in age from 10 to 18, with the largest number in the 14 to 16 year age group.

Thousands of other difficult children never get into court, the report says, "though they may present behavior problems and personality disturbances quite as serious as those of the children who do." Some of these are handled by attendance officers or visiting teachers—school social workers—at school, some by the police without referral to court. Whatever the exact figures of the extent of juvenile delinquency, say the Government authorities, "we know that every year thousands of youngsters get into trouble."

"Delinquency" covers many kinds of behavior and conditions of living, Howard Lane points out.⁵ To be included in statistical tables on delinquency, as he says, a child must be so bothersome that his neighbors call the police, and his parents must be so inadequate or neglectful that the community will not trust them to "straighten out" their erring child. The school alone cannot prevent delinquency, Lane notes, but he makes the point that teachers are the certified professionals in the rearing of children and that "their work is not done as long as even one child lacks the nurturing warmth of personal concern of grownups who care for him."

The Glueck Studies

Significant studies of delinquency were carried out by Sheldon and Eleanor Glueck in the thirties and forties under the sponsorship of the Harvard University Law School.⁶ These researches into crime causation dealt with 500 persistently delinquent boys selected from correctional schools and 500 nondelinquent boys selected from public schools—all the boys from "slum areas." A basic question to be answered was: *Why do some boys growing up in underprivileged areas become delinquent, while others, similarly disadvantaged, do not develop persistent antisocial behavior?* Detailed comparison of the delinquents with the nondelinquents in respect to some four hundred factors—biologic, psychologic, psychiatric, and sociologic—enabled the Gluecks to determine in what respects the two groups differed.

⁵ Lane, H., *Childhood Education*, 32 (April, 1956), pp. 355-56.

⁶ Glueck, S., and F. Glueck, *Unravelling Juvenile Delinquency* (New York: Commonwealth Fund, 1950).

From this there logically followed the question: *Is it possible to devise some means by which these definitive traits and characteristics might serve as a basis for an early diagnosis of delinquency?* In the course of the inquiry, the Gluecks developed predictive tables for the purpose of finding the true pre-delinquent; to distinguish those who are very probably headed for criminal careers unless early and adequately treated, from those whose childish peccadillos will be outgrown along with water pistols and bubble gum.

Illustrations of how the prediction tables work as given by Dr. Eleanor Glueck are as follows:

The social investigation shows that Johnny's father is over-strict in his discipline of the boy. The boy is therefore scored 71.8 on this factor, because it was proved that of all 1,000 boys studied (500 delinquent and 500 nondelinquent) whose fathers' disciplinary practices were over-strict or erratic, 71.8 per cent were delinquent boys. As to supervision, the mother leaves him to his own devices, allows him to run about the streets, and does not know what he does or where he goes. On this he is scored 83.2. Regarding parental affection, the father dislikes the boy, expressing his hostility in no uncertain terms. The score here is 75.9. In respect to maternal affection, the mother is indifferent to her son, with little warmth of feeling for him. The score is 86.2. As regards the cohesiveness of the family unit, this has to be regarded as unintegrated, because the mother spends most of the day away from home, giving little thought, if any, to the doings of the children, and the father, a heavy drinker, spends most of his leisure in bars and cafes with his own friends. The boy is therefore scored 96.9. Addition of the scores results in a grand total of 414. The prediction table places this boy in the group whose chances of delinquency are 9 out of 10. This is so high that preventive treatment is urgently indicated.

Another instance is a boy of eight whose teachers complain that he is beginning to play truant, that he is very stubborn, and that he is known to have stolen a few trifles from the local dime store. Is he on the road to a criminal career? Investigation into the five factors of the prediction table reveals that although the boy's father is firm and kindly in his discipline (9.3), the mother gives the boy scant supervision (score 57.5); both parents, however, have a warm affection for him (scores 33.8 and 43.1), and the family ties are close (20.6). The total "potential delinquency" score is 164.3. Reference to the prediction tables shows that there is less than one chance in 10 that this boy is headed for serious difficulty. Suggestions to the mother about planning suitable leisure time activities for the boy promise fruitful results.

Dr. Eleanor Glueck warns against accepting such diagnostic instrumentalities as these on any wholesale scale. They need testing and

experimental application, she says. Moreover, a prediction table is not to be applied mechanically and as a substitute for clinical judgment. Used properly, however, she says, "this instrumentality will open the way for dealing more directly with the root causes of delinquent behavior than has thus far been possible, and for applying the kind of therapy most suitable for the individual case."⁷

In their report, the Gluecks stress the inadequacy of knowledge of crime causation. "From the point of view of preventing and 'curing' the maladaptations of youth," they say, "the crucial requisite is still lacking—sufficiently exact knowledge of the causes of youth's maladjustment to the stresses, strains, and prohibitions of modern civilization. Without sound knowledge of the causes of maladapted behavior, the elaborate apparatus set up in juvenile court statutes—highly desirable as it is from a humanitarian standpoint—cannot be too successful in curing or even curbing juvenile delinquency."

The Gluecks stress the major point, that the problems of human motivation and behavior involve the study of man as well as society, of nature as well as nurture, of segments or mechanisms of human nature as well as the total personality, of patterns of intimate social activity as well as the larger areas of social process or masses of culture. As an illustration of the mass culture approach to crime causation they cite the studies of human ecology, the relation of neighborhood to human behavior, especially delinquency. But, they say, this kind of approach to the problem of delinquency is of relatively little help in exploring the mechanics of causation:

These mechanisms are operative, not in the external area of culture, but in the mental life of the individual, and in detail as well as in mass. The area studies establish that a region of economic and cultural disorganization tends to have a criminogenic effect on people residing therein; but the studies fail to emphasize that this influence affects only a selected group comprising a relatively small proportion of all the residents. They do not reveal why the deleterious influences of even the most extreme delinquency area fail to turn the great majority of its boys into persistent delinquents. They do not disclose whether the children who do not succumb to the evil and disruptive neighborhood differ from those who become delinquents, and, if so, in what respects. Until they take this factor into account, they cannot penetratingly describe even the culture of the delinquency area.

⁷ Glueck, Eleanor, "Predicting Juvenile Delinquency," *The Survey* (May, 1952), pp. 206-08.

That delinquents do present certain significant psychological differences from other children is indicated in the Glueck report. A review of the findings from the psychiatrist's interview with each boy makes clear, the Gluecks say, that "the delinquents as a group differ from the non-delinquents in many aspects and manifestations of temperament." They are, according to the report, "less adequate than the non-delinquents in capacity to operate on a fairly efficient level, and have less emotional stability." On the other hand, however:

They are more dynamic and energetic, much more aggressive, adventurous, and positively suggestible, as well as stubborn. It becomes evident that they are more inclined to be impulsive and non-reflective in expression of their energy drives than are the non-delinquents. Such temperamental equipment is in itself highly suggestive of the causes for their greater inclination to ignore or readily break through the bonds of restriction imposed by custom and law.

For the most part, says the Children's Bureau, healthy, happy, secure children—children who feel comfortable with themselves, their playmates, their parents, and other adults—do not, as a rule, become delinquent.⁸ "The fundamental way to prevent delinquency is to help children to be healthy, happy, and secure." And it adds:

The problem of preventing delinquency must be seen broadly, in terms of developing well-adjusted children. It involves more than the improvement of juvenile courts or the building of better training schools. It involves more than the isolated efforts of leisure-time and character-building agencies.

Prevention of delinquency involves community concern for the needs of all children—the child across the tracks and in the city slums, the child in the depressed rural regions, the shopkeeper's child and the child of the factory worker, the crippled child and the dull child, the child in the foster home and the child in an institution, the child receiving Aid to Dependent Children, the child who needs aid and is not getting it, and even the child from an economically secure family.

And it involves more than concern. It involves taking action to meet their needs. This is no small task. It means providing basic community services to 49,000,000 children, services that contribute to their healthful physical, social, and emotional growth. These would include social services to build up and strengthen the economic and social security of the family; adequate health services and medical care for all children; opportunities for education and for wholesome recreation and companionship; protection against harmful community influences and against the exploitation of young people for commercial gain.

⁸ *Understanding Juvenile Delinquency*, Children's Bureau Publication No. 300.

The job takes money. But unless we are willing to pay the price for necessary services now, we shall have to pay later in the immeasurable cost of maladjusted personalities, and in the material expense of training schools, prisons, and mental institutions for the care of those we have neglected.

Other Difficulties of Adjustment

Some types of "delinquency," or at least "difficulties of adjustment," it should be noted, are due primarily to what sociologists call "cultural conflict."⁹ In his address at the Midcentury White House Conference on Children and Youth, held in Washington in December, 1950, Allison Davis described the difficulties some schools and their teachers have in efforts to teach conventional, uninteresting materials to children from lower socio-economic groups. "The slum child," Dr. Davis said, "whose own parents curse as a routine method of communication, fight, and consider the school as unimportant in their futures, lives in a physical, economic, and cultural reality basically unlike that in which the middle-class child is trained." Therefore, if the slum child is to be realistic, many of the habits and attitudes he learns will inevitably differ from those of the more sheltered, intimidated, and highly supervised middle-class world. Davis points out that behavior which middle-class teachers, clinicians, and psychiatrists often regard as "delinquent," or "hostile," or "unmotivated" in slum children is usually a perfectly realistic, adaptive, and—in slum life—socially acceptable response to reality.

One particular instance of "lower-class" children's behavior—the physical aggression, or "fighting"—is cited by Davis:

Teachers misunderstand and resent the slum child's fighting, just as they do his cursing, his so-called precocious sexual behavior, and his dialect. In lower-class families, however, the parents themselves have taught their children not only to fight children of either sex but also adults who "make trouble" for them. If the child or adolescent cannot whip a grown opponent, the mother or father will join in the fight. In such lower-class groups an adolescent boy who does not try to be a good fighter will not receive the approval of the father, nor will he be acceptable to any play group or gang.

When truancy was being investigated by a New York City citizens' committee in 1949-50, it was found that most of the children re-

⁹ Davis, Allison, "Socio-Economic Influences upon Children's Learning," *Understanding the Child*, 20 (January, 1951), pp. 1-16.

ferred to the Bureau of Attendance as possible truants from school actually represented "many problems and maladjustments far broader than the absence which called them to attention."¹⁰ The committee was convinced by what they learned that the emphasis should be on exploring how the schools might help in preventing serious disturbance in children while assuring adequate treatment services for those children whose maladjustment could not be prevented. The committee recommended a systematic casework program to seek causes of nonattendance and means to overcome them, pointing out that truancy was not a simple police problem, but that its roots lay in the school, in the child's home, or in the child himself. A large group of the children studied were children with so-called behavior disorders:

These include children subjected to rejecting, inconsistent, unloving, or over-protecting parents who are themselves the product of similar backgrounds and/or great environmental obstacles and deprivation. Since such children experience too little real love and protection, they lack sufficient motivation to accept as their own society's demands and codes of right and wrong. They react to frustrations (and they meet them everywhere) by hitting back at the world in whatever ways they can. When very young they may use as their major aggressive vehicle such symptoms as enuresis, running away, rejecting food, etc. (common to all children but pathological if accentuated and prolonged); when they grow older they may become the defiant, aggressive children, the runaways, those who cannot accept routine, the chronic truants, many of the delinquents seen in court.

In order to learn more about educational possibilities and methods with difficult behavior cases, the Children's Branch of the National Institute of Mental Health at Bethesda, Maryland, has since 1953 been working with successive small groups of hyperactive boys in a special school maintained by the Branch. All the boys so far studied have shared a common pathology to which the term "acting-out" has been assigned. These are youngsters who have run into difficulties with school or other authorities. The basic research at the Institute covers three areas of these children's lives: (a) study of the "acting-out" boy in a total living situation; (b) study of him in individual therapy; (c) study of his learning difficulties as they exhibit themselves in school.

Certain tentative hypotheses have emerged from the work that has

¹⁰ Citizens Committee on Children, "Truancy and Children's Problems," *Understanding the Child*, 19 (April, 1950), pp. 40-47.

been done so far: Need for a thorough knowledge of the boy's life history; need to examine closely the particular means by which an individual boy can learn; need for specially trained teachers—teachers who can understand and accept the pathology of the “acting-out” boy; timed limits for his behavior; a close one-to-one relationship with the teacher; opportunity to use a variety of materials in the group. It is believed that “the study of the acting-out boy in a special school program within a residential-research-clinical setting provides an excellent opportunity to better understand the problems of the teacher in working with ‘acting-out’ boys and the problems these boys have in learning and relating.”¹¹

Reviewing adolescent needs and potentialities, Lawrence K. Frank finds that nearly all adolescents are rebelling against family requirements and prohibitions; that they are anxious and insecure; are seeking reassurance from their own age groups; are inclined to be snobs, members of cliques, and otherwise to discriminate and exclude others; are eager to be approved and accepted by those a little older; are confused and worried about their masculine and feminine roles; are fearful of sex (unless they have had an unusual background); have a feeling of strong loyalty and devotion to their group. Adolescents, he says, are faced with conflicting demands—for example, being continually confused and exasperated by being told “you are old enough to know better,” “act like a man (a woman),” and then shortly afterwards told “you are not old enough to do that.” Frank suggests the following “insights” that will help the adolescent:

Adolescents need help in recognizing that what they individually are worried about—the way they feel toward parents and family, toward own sex and other sex, and their attitudes toward the world—are shared by other adolescents who are equally confused, perplexed, and uncertain.

Adolescents should be made aware of their companions' insecurity and acute need to be accepted and approved, just like their own.

Adolescents need the insight into their parents' worry and fussiness and overstrictness as an expression of parental guilt, anxiety, and often hostility toward this emerging young man or woman who no longer is dependent upon them, submissive to them, or respectful to them.¹²

¹¹ Redl, Fritz, “Child Study in a New Setting,” *Children* 1, U. S. Department of Health, Education, and Welfare, Public Health Service (January-February, 1954), pp. 15-20.

¹² Frank, Lawrence K., “This is the Adolescent,” *Understanding the Child*, 18 (June, 1949), pp. 65-69.

The goal, Frank says, is to help all adolescents accept and respect themselves. "What is of major importance is to make each one realize that he or she is not alone, that all other adolescents are faced with much the same difficulties and feel much the same about themselves and about life."

What are the characteristics of good social adjustment and how do they operate in the school? Essential, say Lehner and Kube, is "a problem-solving attitude—the scientific approach as applied to ourselves and our problems." A well-adjusted teacher is fundamental, they insist. Today's teacher, they say, must be a scholar, psychologist, counsellor, and guide, all rolled into one:

In order to understand children the teacher must first of all be able to understand himself. He must have an appreciation of his own needs, how he reacts when these needs are frustrated, the kinds of defenses he uses, and the possible influences his unresolved problems may have upon the children he teaches. The well-adjusted teacher can help his children to adjust. The maladjusted teacher will probably create new problems for the child or intensify already existing ones. The emotionally healthy teacher who has an appreciation of the psychological principles governing behavior will regard each child as a unique individual whose personal characteristics must be considered in relation to the total learning situation. Such a teacher will be able to help the shy child to grow in confidence, the emotionally starved child to know affection and recognition, or the aggressive child to sublimate or overcome his feelings of hostility.¹³

Democratic versus authoritarian teaching is emphasized by Lehner and Kube: "The authoritarian teacher is essentially self-oriented, rather than student-oriented. He displays little understanding or tolerance when children misbehave or go counter to his wishes or advice." By contrast, ". . . the democratic teacher emphasizes the personal value of each student as part of the total social group. His methods of discipline involve essentially the positive approach, inducing desirable behavior while still protecting the feelings of each pupil."

It is the emotional adjustment of the individual that determines the quality of his citizenship, those in charge of the Detroit Citizenship Study reported in 1953.¹⁴ Guideposts suggested for the schools on the basis of their findings included the following:

¹³ Lehner, George F. J., and Ella Kube, *The Dynamics of Personal Adjustment* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955).

¹⁴ Pfieger, Elmer F., and Grace L. Weston, *Emotional Adjustment: A Key to Good Citizenship* (Detroit, Mich.: Wayne University Press, 1953).

1. Teachers need to know as much about developing emotional adjustment as they do about teaching subject-matter.
2. Teachers need to accept the idea that all behavior is caused.
3. Good citizenship depends on the quality of the relationship among people.
4. Teachers must help to make children feel that they are important.
5. Teachers and schools must find ways in which all children can experience success

Schools and Maladjustment

Early detection of problem behavior is recognized as being of high importance in dealing with delinquency and other forms of maladjustment on the part of children and youth. The Research Bulletin of the National Education Association makes this point in summarizing the conclusions of the Cambridge-Somerville Youth Study, as reported by Powers of the staff of the Study:

In the Cambridge-Somerville youth study . . . the problem boys in each of two groups of boys were judged by a team of experts and by classroom teachers of the boys. The team of experts consisted of one psychiatrist and two social case-workers. In a follow-up ten years later of 100 boys not subject to the counseling treatment of the study, the experts had picked 87 per cent of the 53 serious delinquents, and the teachers had picked 77 per cent. However, of 47 boys who did not develop delinquent careers, the experts had predicted that about one-half and the classroom teachers had predicted that about one-third would become delinquent.¹⁵

The conclusion was that since the unadjusted nondelinquent resembled the delinquent, the school should be concerned with all problem children.

One of the most valuable types of assistance in the problem of youth in need of help has been that provided by the community child guidance clinics, now available in hundreds of communities. These clinics have not only been valuable for the service they have rendered to individual youngsters in difficulty, but also—and perhaps even more significantly—for the assistance they have given to teachers and other school personnel in understanding the behavior of children and youth.

Summarizing the situation at present with respect to the schools and children and youth in difficulty, the NEA Research Bulletin says:

¹⁵ *Schools Help Prevent Delinquency*, NEA Research Bulletin, Vol. xxxi, No. 3 (Washington, D.C.: National Education Association, October, 1953).

Public school systems cannot accept direct responsibility for youth who have already left school, although they may offer a special program of study, recreation, or shopwork. The primary work of the schools must come while youth are still in school. Obvious areas for schools to attack in alleviating unadjustment are problems of truancy and learning. At the present time the legally predelinquent youth cannot be singled out with complete assurance from among all problem-behavior youth. Therefore, the school staff must give first attention to fostering good adjustment in all children as the way to prevent legal delinquency.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Describe any individual—child, youth, or adult—whom you consider to have been definitely “maladjusted.” What do you think were the causes of the maladjustment, what happened to him, and what was the outcome? After reading this chapter, do you have any different view of the case than you had before?
- 2 • What would you do about Jimmie Smith—and also “the Taglione kid”? Does education come into this case?
- 3 • What is your own concept of “delinquency”? Describe any individual boy or girl you know or have known whom you would consider “delinquent.” What would you do to help in such a case?
- 4 • How would you interpret in terms of practical school needs and possibilities the statement by the Gluecks that “the problem of human motivation and behavior involves the study of man as well as of society, of segments or mechanisms of human nature as well as the total personality, of patterns of intimate social activity as well as the larger areas of social process or masses of culture”?
- 5 • What is your opinion of the Children’s Bureau statement that “for the most part, healthy, happy, secure children do not as a rule become delinquent”?
- 6 • From your own experience, what opinion do you have regarding the distinction Allison Davis makes between the “slum child” and the “middle class” child? In the school situation with which you are familiar, do you have any situations such as he describes?
- 7 • What emotional factors were involved in any truancy cases that you have known?
- 8 • Is Lawrence K. Frank correct in his statement that “nearly all adolescents are rebelling against family requirements and prohibitions,” “that they are anxious and insecure,” and so on? Would the “insights” he suggests have any practical value in a school situation?

- 9 • Do you accept the statement of the Detroit Citizenship Study that "teachers need to know as much about emotional adjustment as they do about teaching subject matter"?
- 10 • Discuss failures in school work as an emotional problem. Are failures useful in learning? Should we try to teach children to adjust to them?
- 11 • Is there a child-guidance clinic in your community or nearby? If so, try to arrange to visit it and also find out to what extent the local school is using the clinic's services for help in social maladjustment and conduct disorders.

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Adler, A., *Guiding Human Misfits*. New York: Philosophical Library, 1948.
- Aichhorn, A., *Wayward Youth*. New York: The Viking Press, 1935.
- Baruch, D. W., *Understanding Young Children*. New York: Teachers College, Columbia University, 1949.
- Brookover, W. B., *A Sociology of Education*. New York: American Book Company, 1955.
- Burgess, H. S., *Discipline: What Is It?* New York: Child Study Association of America, 1948.
- Carmichael, L. (ed.), *Manual of Child Psychology*. New York: John Wiley & Sons, 1954.
- Cronbach, L. J., *Educational Psychology*. New York: Harcourt, Brace & Co., 1954.
- Gesell, Arnold, Frances L. Ilg, and Louise Bates Ames, *Youth—The Years from Ten to Sixteen*. New York: Harper & Bros., 1956.
- Glueck, S., and E. Glueck, *Unraveling Juvenile Delinquency*. New York: Commonwealth Fund, 1950.
- Griffiths, W., *Behavior Difficulties of Children as Perceived and Judged by Parents, Teachers, and Children Themselves*. Minneapolis, University of Minnesota Press, 1952.
- Helping Delinquent Children*. Washington, D.C.: U. S. Department of Health, Education, and Welfare, 1953.
- Hymes, J. L., Jr., *Behavior and Misbehavior: A Teachers Guide to Action*. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1955.
- Kornberg, L., *A Class for Disturbed Children*. New York: Teachers College, Columbia University, 1955.
- Kvaraccus, W. C., *Juvenile Delinquency and the Schools*. New York: World Book Co., 1945.
- Lehner, G. F. J., and E. Kube, *The Dynamics of Personal Adjustment*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.

- Lloyd-Jones, E., R. Barry, and B. Wolf, *Case Studies in Human Relationships in Secondary School*. New York: Teachers College, Columbia University, 1956.
- , and M. S. Smith, *Student Personnel Work as Deeper Teaching*. New York: Harper & Bros., 1955.
- Ojemann, R. H., *Personality Adjustment of Individual Children*. Washington, D.C.: National Education Association, 1954.
- Pflieder, E. F., and E. Kube, *The Dynamics of Personal Adjustment*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- Pollak, O., *Integrating Sociological and Psychological Concepts*. New York: Russell Sage Foundation, 1956.
- Promise for Youth: Exploring Psychiatric Research in Juvenile Delinquency*. New York: Welfare and Health Council, 1955.
- Redl, F., and W. W. Wattenberg, *Mental Hygiene in Teaching*. New York: Harcourt, Brace and Co., 1951.
- Remmers, H. H., and C. G. Hackett, *Let's Listen to Youth*. Chicago: Science Research Associates, 1950.
- Segel, D., *Frustration in Adolescent Youth*, U. S. Office of Education Bulletin, No. 1. Washington, D.C.: U. S. Government Printing Office, 1951.
- Sheviakof, G. V., and F. Redl, *Discipline for Today's Children and Youth* (revised by Sybil K. Richardson). Washington, D.C.: Association for Supervision and Curriculum Development, 1956.
- Stevenson, G. S., *Mental Health Planning for Social Action*. New York: McGraw-Hill Book Co., 1956.
- Taba, H., *School Culture*. Washington, D.C.: American Council on Education, 1955.
- , *With Perspective on Human Relations*. Washington, D.C.: American Council on Education, 1955.
- Tappan, P. W., *Juvenile Delinquency*. New York: McGraw-Hill Book Co., 1949.
- Teacher Opinion on Pupil Behavior*, National Education Association Research Bulletin, 34 (April, 1956), pp. 52-107.
- United States Department of Health, Education, and Welfare, *The Adolescent in Your Family*, Children's Bureau Publication, No. 340, rev. 1955. Washington, D.C.: U.S. Government Printing Office, 1954.
- , *Understanding Juvenile Delinquency*, Children's Bureau Publication, No. 300. Washington, D.C.: U.S. Government Printing Office, 1955.
- Witmer, H. L., and R. Kotinsky (eds.), *Personality in the Making: The Fact-Finding Report of the Midcentury White House Conference on Children and Youth*. New York: Harper & Bros., 1952.

15

ADJUSTMENT AND GUIDANCE OF THE EXCEPTIONAL CHILD

With the increased attention given by psychologists and educational workers to emotional development, there has come a change in the attitude toward those individuals in our society who are "handicapped" in any way—the physically handicapped (blind, deaf, crippled); the so-called "mentally retarded"; and the emotionally disturbed—indeed, all those "exceptional" children who differ markedly from what is thought of as "normal" and therefore are presumably in need of "special education." The change is primarily toward a more hopeful attitude in regard to the developmental possibilities of human beings generally.

Who are the "exceptional" children? Various terms have been used to designate different types of physical, mental, and emotional handicap, or any other deviations from an assumed norm. "Atypical," "special," "exceptional," have all been current, with "exceptional" the term now most frequently employed as a collective designation and "special" as the term used for the educational program.

Extent of the Problem

In every school system, the 49th Yearbook of the National Society for the Study of Education points out,¹ there are children who, because they deviate markedly from the so-called "normal," require special skills and services on the part of teachers and other school personnel. The Committee for the Yearbook says:

These children cannot adjust to the school program without such

¹ National Society for the Study of Education, *The Education of Exceptional Children* (Chicago: The Society, 1950).

special services. Some of them are physically handicapped—blind, deaf, epileptic, or crippled. Some differ mentally to a significant degree, being either seriously retarded in intellectual development or exceptionally gifted. Some are emotionally disturbed or are unable to make a proper social adjustment in school and community; some of these are children with serious behavior problems which may result in a distorted personality or in delinquency.

All these are called "exceptional children," the Yearbook Committee says, the term being used to refer to *those who deviate from what is supposed to be average in physical, mental, emotional, or social characteristics to such an extent that they require special educational services in order to develop to their maximum capacity.* They do not, of course, comprise a single, homogeneous group—they include children "with deviations in various areas." The groups of exceptional children dealt with in the Yearbook include:

1. Children with physical handicaps: (a) crippled children—those with poliomyelitis, cerebral palsy, congenital deformities, and other orthopedic handicaps; also children with cardiac difficulties, sometimes called "crippled heart"; (b) children with impaired hearing—the congenitally deaf, the adventitiously deaf, and the hard of hearing; (c) children with visual impairments—the blind and the partially seeing; (d) children with speech handicaps; (e) children with other types of physical handicaps, such as tuberculosis, epilepsy, and endocrine disorders.
2. Children with mental deviations: (a) children of low intelligence, including both the feeble-minded and those who are less seriously defective in intellectual development; (b) children with high intelligence, including both those with special talents and those who are superior in general intellectual abilities.
3. Children with emotional or social maladjustments, including those with serious behavior disorders or emotional disturbances.

It is difficult to get accurate figures on the number of "exceptional children." Recent estimates indicate that from 10 to 12 per cent of elementary and secondary school-age children in the United States are in need of special teachers and services, but that fewer than 500,000 of the approximately 5,000,000 of these children are now receiving the benefits of special education. Some estimates are higher. Newland asserts that "at least one out of every seven of our children of school age is in need of some kind of special educational service," and he says that for the nation at large only some 15 per cent of our

exceptional children are reported to be receiving special educational services.²

A typical national or international conference on exceptional children will have sections devoted to crippled children, behavior problems and delinquents, the hard of hearing, the deaf, the blind, "sight-saving," the mentally handicapped, the gifted, speech correction, children with lowered vitality, and "the clinical psychology of exceptional children." Only a cursory glance at such a list is needed to show how difficult it is to group individuals on the basis of any one disability, defect, or condition. The more classification is attempted, the more evident it becomes that, although there are common problems, each individual is different, and physical, emotional, and social elements are inextricably commingled.

It is significant that modern books on activities for those who vary markedly from the so-called "normal" cover a much wider range than formerly. Thus one recent book on "the handicapped" lists deaf, blind, diabetic, orthopedically incapacitated, neurologically incapacitated, epileptic, cardiac, tubercular, convalescent, psychotic, mentally defective, mentally gifted.³ Disabled people, according to the author of this particular book, constitute one of the subgroups within our culture that has become "a deep concern of educators, physicians, and social workers." Dr. Hunt says:

Today we have accepted the responsibility for eliminating the social problems the disabled pose, and for assuring them a happier, more normal life. The social philosophy that fosters rehabilitation of the disabled rises from the very core of a democratic society, from the dictates that foster it. These beliefs may be summed up as: (1) The disabled are the products of social living and therefore society's responsibility. (2) Society's benefits should not be restricted to age group or type of disability. (3) What happens to the minorities is as truly a criterion of democracy as rule by the majority. (4) Prosperity of all determines the welfare of all and what strengthens the individual strengthens the nation. (5) Each person should have opportunities to develop to the limit of his capacities, but equal opportunities do not necessarily mean identical opportunities. (6) Responsibility for optimum development must be shared responsibility—as-

² Newland, T. Ernest, "Helping the Exceptional Child in the Regular Room," *Understanding the Child*, 25 (June, 1956), pp. 67-69. See also Willard Abraham, "The Child Who Is Different," *Understanding the Child*, 24 (January, 1955), pp. 2-6.

³ Hunt, Valerie H., *Recreation for the Handicapped* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955).

sumed by the society and the individual. (7) Re-education or rehabilitation of the seriously disabled requires skills from many fields.

The Physically Handicapped

Our knowledge of the emotional difficulties of the physically handicapped is still limited, but it is increasing. "Since the advent of modern psychology," says Dr. Howard A. Rusk, "the emotional impact of disability upon the individual has commanded the attention of both research and clinical psychologists and psychiatrists. Their theories have varied from the widely accepted concept of Alfred Adler, that disability serves as a motivating factor through compensation, to the more recent social psychological views of Roger G. Barker and others, that the physically handicapped person, being a member of a minority group and subject to the same economic and social pressure as other minority groups, is likely to develop the same emotional outlooks as those who are discriminated against because of age, sex, religion, or race."⁴

It is increasingly realized that, important as the best possible medical care is for the handicapped child, he should at least have access to the education that other children get. This may require, says Wishik, "merely a pass to ride on a special bus in order to get to school," or it may require a teacher being sent into his home, but "over and beyond this, he should receive additional special education to help him compensate for his deficiency—perhaps reading instruction, lip reading, guidance for his behavior, an opportunity to take part in the slow-learning class or some other modified program." Moreover, he needs help in adjusting emotionally to the fact that he cannot do things like other children—and this may mean merely some additional counselling or guidance, or it may call for intensive social service or psychiatric treatment to help both parent and child.⁵

That special problems of adjustment do exist for the blind, the deaf, and the seriously crippled is, of course, generally assumed to be true. But it is also important, Beatrice Hurley points out, to realize that *the handicapped child is a person*.⁶ The Committee on the 49th

⁴ Rusk, H. A., "But the Spirit Giveth Life," *Survey*, 85 (April, 1949), p. 212.

⁵ Wishik, Samuel M., *How to Help Your Handicapped Child*, Public Affairs Pamphlet, No. 219 (New York: Public Affairs Committee, 1955).

⁶ Hurley, Beatrice, "The Handicapped Child is a Person." *Understanding the Child*, Vol. XVIII (January, 1949), pp. 9-12.

Yearbook insists that "exceptional children are basically like other children":

The mentally retarded child, the child with a visual impairment, the crippled child, and every other exceptional child has fundamental motives and drives common to all children in general; but along with these common characteristics there is in each case a specific handicap or exceptional condition that requires an adjustment or special service in his educational program. The program should be designed with full recognition of (a) his likeness to normal children, and (b) his special needs. This, in brief, constitutes the modern approach to the education of exceptional children.

Moreover, the Committee adds, "the new methods that have been developed for exceptional children have yielded gratifying results in the education of other children; there is an oft-repeated saying that we learn about the 'normal' from the 'abnormal.'"

"Whatever the type of exceptional condition," says the Yearbook, "and wherever the child may be, the important matter is that the child's needs are identified and satisfactorily met." This is on the theory that the objectives of education for exceptional children must be in accord with the principles of democracy—that exceptional children, like all other children, "must become well-adjusted members of the family and the community, must participate in the activities of the workaday world, and must assume responsibilities in keeping with their capacities as citizens in a democracy."

The Blind and Partially Seeing

A blind child, the U. S. Children's Bureau points out, needs what all other children need—and more besides.⁷ "He needs to know that he is loved and wanted and is an important member of the family. He needs to be able to help himself and have others recognize that he can. He needs to know the happy feeling of getting something done well." It is important for parents and others, the Bureau says, to realize that, mentally, blind children are like other children; that though sometimes they at first seem slower than sighted children, actually blind children are about the same as others in ability—some average, a few below average, some higher than average.

The American Foundation for the Blind recognizes three types of education of blind children of school age: (1) education in a public

⁷ *The Preschool Child Who Is Blind*, Children's Bureau Folder, No. 39 (Washington, D.C.: U.S. Government Printing Office, 1953).

or private residential school for the blind; (2) education with the sighted in public or private schools with a resource or special class teacher available during the entire school day; (3) education with the sighted in public or private schools with itinerant teaching service available at regular or needed intervals.⁸ In approving these different types of education of the blind, the Foundation says it is recognizing the basic premise that "each blind child should be educated according to his individual needs," and it further suggests that the changing needs of each individual child may require flexibility that will permit him to move from one type of program to another.

As with all human beings, says Lowenfeld in his book on the education of the blind,⁹ "love and affection are the fundamental needs." Discussing the educational work of two types for the blind—sending the child to a residential school or keeping him at home and having him attend a class of blind children in the local public school system—he says that both "have been successful in producing well-adjusted and capable adults, which is the ultimate test of their educational effectiveness." Like most workers in this field, Lowenfeld is optimistic about work with the blind. "The blind child can be as happy as other children are," he says. "He should be able to earn a living; he or she can marry and live happily"—if he has it in him and has learned to appreciate what he has rather than what he lacks.

Attendance of blind children in regular schools with other children has been carried on with success in a number of places. California school districts report from their experience that "an unsegregated program for the blind offers opportunities to acquaint the child with his varied environment and to help him adjust to a sighted world." In such a program the school provides a "resource room," which is the center of special training for the blind children, to help them keep up with classmates in the "home room," and a "resource teacher"—a specially trained worker whose elementary teaching experience must show that, among other things, she herself is emotionally stable.¹⁰

An illustration of what can happen in a situation where blind chil-

⁸ American Foundation for the Blind, *Report* (1954).

⁹ Lowenfeld, Berthold, *Our Blind Children: Growing and Learning with Them* (Springfield, Illinois: Charles C. Thomas, 1956).

¹⁰ Campbell, Dorothy, "Blind Children in the 'Normal' Classroom," *Understanding the Child*, 24 (June, 1955), pp. 73-76.

dren are getting their schooling with other children is described by a visitor to a California school:

This observer, looking for the one blind child in a three to four year age group at music and nap time, needed to have him pointed out by the teacher of the group. It turned out that he was the very active "Denny" I had earlier eliminated as a possible blind child. He was dressed as a cowboy, complete with hat and spurs, and had an active little body to complete the picture of robust good health. On arrival, he explores the play yard, through touch and sound, finding who his companions are by asking "Who's there?" Then, his environment established, he is on his own, finding large equipment by himself, scooting down paths (with a few bumps) on the fire truck, climbing the jungle gym, building with blocks and rolling in the big barrel. Teachers follow a "hands off" policy with Denny—they will help him do what he wants to do, but will not do it for him.

Betty, of the 5-year-old group, is a quieter child—in her activities, that is—not conversationally! She had been brought to school in a new car pool, the morning I visited, and the mother-chauffeur reported that Betty had changed the entire character of the trip with her cheery flow of chatter. She had the children entranced with her description of their route as a "secret road," and her imaginative humor had livened the trip for every one. Betty's teacher pointed out ball throwing as one activity which two blind children are not apt to engage in, but which a blind and a sighted child can handle easily and pleasurably for both.

Partially seeing children also present problems. Most of these attend local schools in their own communities, according to the National Society for the Prevention of Blindness. The Society has therefore published a pamphlet to meet the needs of classroom teachers for whom specialized services for the partially seeing are not available.¹¹ Some of the suggestions are: Have all children so seated that charts, demonstrations, bulletin boards, and chalkboard work are readily visible and free from glare; use adjustable furniture to obtain the best visual situations for all the children; select reading materials to assure large, clear type and pictures, with adequate spacing between the lines, adequate margins, and good quality paper without a glossy finish; encourage the children to write larger than the average and use manuscript writing; plan the daily schedule so that periods of close eye work alternate with eye rest periods. The pamphlet points out that "the prevalent change from a formal, subject-matter oriented

¹¹ Reproduced in Winifred Hathaway's *Education and Health of the Partially Seeing Child* (New York: Columbia University Press, 1954).

type of program to the socialized, integrated activity or core-curriculum approach tends to reduce the eye load for all children." Moreover, "the present emphasis on group endeavor rather than on individual competition makes it easier for partially seeing children to obtain assistance from student readers and to substitute manual and auditory experiences for visual tasks." The pamphlet says that most of these suggestions, when put into practice, will benefit all children in the class and will lessen the possibility of differentiating partially seeing children from their classmates.

That some of the difficulties in learning to read may be very definitely connected with eye deficiencies impels the National Society for the Prevention of Blindness to warn against defective vision. In a 1956 pamphlet the Society says that vision defects can present serious obstacles to the learning processes "of the one out of every four school-age children known to need some form of eye care."¹² It cautions parents and teachers to watch for certain danger signs—such as the child's complaint of headache, nausea, dizziness, sensitivity to light, eye-rubbing, attempts to "brush away" blur, irritability, and inattention to school lessons. "For the one out of four children who needs eye care," the Society says, "failure to correct vision defects may spell lifelong social and psychological handicaps."

What Winifred Hathaway says in connection with her study of the partially seeing child would apply to other handicapped children: "There is a growing realization that emotional, mental, and physical health are inseparable, and should be so considered in any health program, whether for the handicapped or any other group."¹³ As for children we think of as handicapped, she says, they have, of course, characteristics common to all human beings, but their emotional health may be seriously affected by their own reactions to their handicap and by the reactions of those who come in contact with them. She says:

The child with a handicap is often fearful of the reaction of others to his defect. As he grows older there arises the question of the possibility of prevention. Who was at fault? If the difficulty might have been prevented, bitterness toward those responsible may develop—a bitterness that cannot help but impede social adjustment. Among preventable handicaps

¹² National Society for the Prevention of Blindness, *Eye Inspection and Testing Visual Acuity* (New York: The Society, 1956).

¹³ Hathaway, *op. cit.*

are eye difficulties resulting from preventable diseases to which adequate attention was not given. A cross-eyed child who realizes that his eye might have been straightened and its sight preserved by proper treatment may resent the negligence or ignorance that prevented this. The attitude of society toward his handicap may also have an effect on his emotional and mental health. If the parents feel themselves responsible for the difficulty, they may be over-protective in an effort to make up for the neglect. On the other hand, parents may develop an aversion to a child whose handicap is a constant reminder of their own mistakes or negligence. Even in a case in which the parents realize that they are not in any way responsible for the handicap, they may hinder the child's development by doing everything for him instead of encouraging him and providing him with opportunities to become independent. They may discuss his difficulties with others, in his presence, and thus develop in him a feeling of self-pity, or egotism, because of the attention given him, or of withdrawal within himself.

Children's Hearing Difficulties

What about the child who is hard of hearing? Valerie Hunt says there is no evidence that deafness causes any particular personality pattern, but that "there are many emotional effects of deafness upon a person in his efforts toward self-adjustment."¹⁴ The general effects of deafness upon the personality vary for different individuals, depending largely upon when the deafness occurs—whether it is congenital, occurs in early childhood, or comes about in adult life. However, "there are many emotional effects of deafness upon a person in his efforts toward self-adjustment, educational progress, and social and vocational adjustments," and these emotional effects may produce no personality disturbances whatever, or they may lead to more handicaps than the actual hearing loss.

The U. S. Children's Bureau tells the story of Mary and Tommy in its booklet on *The Child Who Is Hard of Hearing*.¹⁵ "When we don't hear," says the booklet, "it's like being in another world."

That was Mary's trouble. A great part of what we hear was blotted out for her. She didn't know it and her parents didn't know it.

Mary was in the third grade. She'd always done well in school and was well liked. During the winter she'd had measles. After that, head colds kept her out of school. When she came back, she wasn't her old self.

¹⁴ Hunt, V. H., *Recreation for the Handicapped* (Englewood Cliffs, N.J. Prentice-Hall, Inc., 1955).

¹⁵ Bureau's Folder, No. 36 (Washington, D.C.: Federal Security Agency).

Her work fell off. Somehow, she'd lost interest. Her teacher would have to call her several times to get attention.

Mary used to be as good-natured as the next child. Now she seemed to get irritated often and over nothing. It made her hard to get along with.



**Some children have special problems because they are hard of hearing.
(Courtesy of the Speech Department, Southern Illinois University.)**

Her friends began to have little to do with her. She spent a lot of time by herself and did a good bit of day-dreaming.

The teacher talked about Mary with the public-health nurse. They wondered whether her sickness the winter before *might* have something to do with the way she was acting. Sometimes such a sickness results in a hearing loss. And children who've lost some of their hearing often act cranky and withdrawn.

The nurse went to visit Mary's mother, who said that she, too, had been

worried. "I've been thinking of taking her to the doctor," she said. "Sometimes she seems like she may be losing her hearing."

The family doctor examined Mary and found that she had some continuing infection in her nose and throat. "With her history of measles and repeated colds," he said, "Mary's hearing may be affected. That, along with her being run down, would explain her behavior."

The doctor sent Mary and her mother to an otologist, a doctor who is an ear specialist. He asked a number of questions and examined Mary's ears, nose, and throat. He made a test which showed that Mary's hearing was quite a bit below normal.

The otologist told Mary's mother that now we have medicines—like the sulfas and penicillin—which often can check or cure infections that could cause hearing loss.

He treated Mary with penicillin, which—in this instance—cleared up the infection. Mary regained her hearing and soon was her old self again.

"There may be as many as a million children of school age in this country who have no more hearing than Mary had," says the Children's Bureau in commenting on Mary's case. "Each year more and more school-age children are being helped. But first they have to be found. That is, parents and teachers and doctors must find out if they are hearing as much as they should."

Then there was four-year-old Tommy—another Children's Bureau example, but with a different problem. Tommy made sounds, but they didn't seem much like words. The doctor sent Tommy and his mother to a Speech and Hearing Center, where they found that, although Tommy did have a severe hearing loss, some hearing was left. Plans were worked out for him to learn to read lips, to use a hearing aid, and then go to school with the other children of the neighborhood.

"Loss of hearing very often brings with it emotional problems and sometimes personality changes that are very distressing," says Edward Podolsky:

The deafened child finds himself face to face with new problems to solve which are beyond his capabilities, and he is frightened. Unlike the blind or the grossly crippled, the hard-of-hearing child is seldom sympathized with. More often he is ridiculed—just as is the obese or the stutterer. The frightened hard-of-hearing child, in time, becomes suspicious, and sometimes even paranoid. He prefers to have people avoid him and not talk about him. "People get mad at you when you can't hear," is a common complaint. The most frequent fear is that of being considered stupid. At the same time there is a great fear of loneliness, an

overwhelming feeling of being disconnected with life, of being out of tune with the rest of the world, of living in a vacuum.¹⁶

What can be done to lessen the fears of the deafened child? The child's attention can be called to certain assets he has as a compensation for deafness—that deafness decreases distraction and increases concentration, fosters constructive thought, and may increase the interpretive capacity of the other senses. Dr. Podolsky also cites the better methods now available for dealing with deafness—the fenestration operation; medication with hormones, vitamins, and other products; speech-reading as a means of communication, thereby lessening the sense of fear and isolation. These, and the various methods science affords today on overcoming deafness to a greater or less extent, may, in time, he believes, “abolish the terrible sense of fear and helplessness in the deaf child.”

In his foreword to Steven Getz's *Environment and the Deaf Child*, Dr. Elwood Stevenson, superintendent of the California School for the Deaf, says: “Too much emphasis cannot be made on the central fact that every phase in the work of educating the deaf, important as it is, must be correlated at all times with the object of this field of special education, viz.: to adjust deaf children to the civic, social, moral, and economic conditions of life to the end that they may be law-abiding and self-supporting citizens of the state.”¹⁷

Speech Difficulties

Approximately a million children in the United States have handicapping speech defects, it is estimated. Types of speech disorders that are regarded by the authorities as having a large emotional element are (1) indistinct speech, (2) lisping speech, and (3) stuttering and stammering.

How speech correctionists study the history and present condition of the stuttering child for signs of emotional conflict is described in a report of the American Speech and Hearing Association:

We must understand at the outset that speech is the great revealer of our inner selves. The rhythm of our words can reflect our inner agitation, even when the words themselves are calm. Certain people develop “poker”

¹⁶ Podolsky, Edward, “The Frightened Child and School,” *Understanding the Child*, 24 (April, 1955), pp. 40-43.

¹⁷ Getz, Steven B., *Environment and the Deaf Child* (Springfield, Illinois: Charles C. Thomas, 1953).

voices, as well as faces, in the effort to prevent their inflections and expressions from betraying their inner feelings. The intensity and quality of our voices tell much about our moods. Is it strange, then, that the fluency aspect of our speech can be affected by emotional strife? . . .



Individual instruction. (Courtesy of the Speech Department, Southern Illinois University.)

A rejected child tries desperately to gain acceptance. Verbal expressions of love are required of a child who hates. Desire and guilt, unpleasantness and inevitability—they all wage their internal wars and reflect themselves in hesitant speech. . . .

Child stutterers, however, are not all child neurotics, any more than they are child "dysphemics." There are many who are apparently normal children. Their life situations are excellent. Their coordinations and timing and rhythm may even be exceptional. Search and probe as we will, we can find only a normal child with very ordinary reactions, behavioral

or psychological. Nevertheless there may be causal factors at work just as potent as any that have been mentioned, and the speech correctionist attempts to discover them and to evaluate their significance.¹⁸

Infantile Paralysis

Experience with infantile paralysis has given new emphasis to the emotional problems of the physically handicapped that is still significant, even though polio promises to be no longer the crippling menace it has been over the years. Discussing the problems of adolescent victims of poliomyelitis Elizabeth Lockwood says:

Whenever it is possible to have these adolescents in the regular school, participating in a typical curriculum, enjoying the social and mental stimulus of children of their age, it is better to do so—from the standpoint of the child, the school, and the community. . . . Being on an equal, or nearly equal, footing with fellow students is vital: (1) as a therapeutic morale builder for the child himself, and (2) as a means of providing him with the general all-round curricular advantages and development planned by the school.¹⁹

Even with hospitalized children, the present opinion of many authorities, both medical and educational, is toward all possible participation in the physical, mental, and social activities of the normally maturing child. "Those of us who have practiced medicine, and particularly pediatrics," says Dr. Hart E. Van Riper, Medical Director of the National Foundation for Infantile Paralysis, "prefer to see our children, regardless of their economic status, in a ward, rather than in a private room. . . . Children receive from group teaching something that is not available to the child who receives only bedside instruction."²⁰ The final injunction in a series of suggestions used in the polio campaigns stresses the emotional factor in all illness and disability:

Remember: Facts fight fears. Half or more of those having the disease show no after-effects; another fourth recover with very slight crippling. A happy state of mind tends toward health and recovery. Don't let your anxiety or fear reach your children. Your confidence makes things easier for you and for others.

¹⁸ Van Riper, C., *Stuttering* (Chicago: National Society for Crippled Children and Adults, 1948).

¹⁹ Lockwood, E., "Educational Needs of Handicapped Adolescents," *High School Journal*, Vol. XXXII (January-February, 1949), p. 13.

²⁰ Van Riper, Hart E., *Advancing the Education of the Hospitalized Child* (New York: National Foundation for Infantile Paralysis, 1948).

Collaboration among all available agencies is stressed in current statements regarding the possibilities of help for crippled children. "Much can be done for crippled children today," says Romaine Mackie. "Under an adequate program of care many of them can be cured, and large numbers of them will improve to the point where they will be able, for all practical purposes, to lead normal lives. Only a small percentage must remain totally dependent." Dr. Mackie adds, however:

The happy results do not come about if the care of the crippled child is left to chance. The successful adjustment of such large numbers of boys and girls comes only through the team work of professional people working closely with the parents. The physician, the therapist, the teacher, the nurse, the medical social worker, each contributes to the restoration and development of these boys and girls. It takes a very special technical knowledge and skill to help most of them. A kind and understanding attitude toward their problem is essential, but such attitudes alone are not enough. The technical skill of each professional person must be available as needed if effective results are to be attained.²¹

Cerebral Palsy

Considerable attention has been given in recent years to cerebral palsy, especially to the type of cases usually referred to as "spastics." For many years, Eleanor Schonell points out in her book,²² physicians have been aware of the clinical connotation of the term—cerebral palsy—as denoting a brain lesion in consequence of which the child has difficulty in sitting, walking, using the hands, or balancing the head and body—and have treated many of these cases with extreme skill. "But until recently," she says, "only a small proportion of cerebral palsy cases were considered to be worth spending time on educationally. The general attitude toward cerebral-palsied children with severe disabilities, especially those afflicted with athetosis, was that most of them were mentally defective and would not justify time and energy spent on trying to educate them." Dr. Schonell tells how she and others came to change their views as to the educational possibilities of spastics:

The greatest shock to the complacency of doctors and educationists

²¹ *Crippled Children in School*, Office of Education Bulletin, No. 5 (Washington, D.C.: U. S. Government Printing Office, 1948).

²² Schonell, Eleanor, *Educating Spastic Children* (New York: Philosophical Library, 1956).

was given by Dr. Earl Carlson, an American, who, born with an extremely severe degree of cerebral palsy and regarded by many as an incurable cripple, yet contrived to overcome his physical disabilities sufficiently to enable him not only to attend high school and university but also to qualify as a doctor and specialist in the treatment of cerebral palsy. Yet, as he shows us in his book *Born That Way*, had it not been for his own strength of will, he might have become one of those chair-ridden invalids whose limited horizon would have stultified his mental development, even if he had escaped the stigma of mental defect which has been attached to others similarly afflicted.

Educating the cerebral palsied child must be started by professional personnel as early as possible, says the United Cerebral Palsy Educational Advisory Board.²³ "Nursery school and kindergarten is even more necessary for the handicapped child than for the normal child. Due to the fact that the first five years of life are the years during which the child's future attitudes are molded, when he gathers his impressions of the environment and of the relationships of people to one another, and when he begins to sense his role in life, it is impossible to overemphasize the importance of early guidance of the cerebral palsied during these years."

The Mentally Retarded

There has been considerable change in recent years in the attitude toward "retardation" among school children. On the theory held for many years that a specific amount of material to be learned each year should be considered as "normal," those children who did not achieve this were classified as "retarded." This notion still prevails to some extent in theory, and to a considerable extent in practice. With an expanding concept of what education really is, however, and recognition of many more aspects of human living than the narrowly intellectual, a less rigid concept has come to be widely accepted and applied in the actual school situation.

One reason for the changed attitude toward retardation is the evidence that has accumulated over the years as to the practical impossibility of any grouping of human beings really being "homogeneous," even in so-called mental abilities and "academic" subjects—to say nothing of the many other important things in life and learning.

²³ United Cerebral Palsy Educational Advisory Board, *Realistic Educational Planning for Children with Cerebral Palsy* (New York: United Palsy Association, Inc., 1952).

Setting up numerous groups on the basis of intelligence tests, as was the accepted practice not too many years ago, only emphasized the fact that in each group thus formed there were still wide differences of one kind or another. Moreover, the direct relationship between school success in the "academic" subjects and the child's emotional life has been made clear in many studies. Reading disabilities, for example, are frequently found to be due to causes deep in the emotional life of the child.²⁴

Retardation is a real problem, however. The Federal Office of Education reports about three-quarters of a million school-age children in the United States as mentally retarded "with respect to learning abilities."²⁵ Most of these, the Office of Education says, are capable of making considerable progress in the basic educational skills; a much smaller number have competence only for personal and social improvement; only a very small percentage require permanent custodial care. Indeed, says Dr. Hill in the Government report:

Most mentally retarded boys and girls, with the proper help, may become valuable assets in their own homes and local communities. The less severely retarded have proved their competence for citizenship and productive employment; many of the more severely retarded may be helped to contribute to family life and to participate in useful activity under sheltered conditions. However, neither the less severely retarded nor the more severely afflicted children can realize their full potentials unless there are provided the necessary opportunities for growth and development during their early years. The mentally retarded who are not benefited by appropriate school services represent too frequently unrealized resources for which society pays in terms of support and the maintenance of institutions for permanent care.

In working with severely retarded children, Dr. Hill says, the first problem most frequently faced by the teacher will have to do with the child's own attitude toward himself:

Because of over-protection, rejection, or lack of experience in group situations, the child will often come to school as an unhappy or asocial individual. He may be lacking in self-esteem and confidence, completely egocentric in his attitudes, or extremely fearful. The primary objective of all classroom experience during the initial period of schooling may neces-

²⁴ See P. A. Witty, *Reading in Modern Education* (Boston: D. C. Heath & Co., 1949), pp. 20 et seq.

²⁵ Hill, Arthur S., *The Forward Look: The Severely Retarded Child Goes to School*, Office of Education Bulletin, 1952, No. 11 (Washington, D.C.: U. S. Department of Health, Education, and Welfare, 1953).

sarily be to build up the pupil's sense of security by developing feelings of acceptance, first toward himself and then toward others. Unless there can be developed self-esteem and personal confidence, the pupil progress may be both limited and warped.

Adequate diagnostic services are especially important for the operation of a good special education program, the Government bulletin asserts. "Too frequently well-conceived special education services have broken down and been discarded because the special classes have become the recipients of children who were personally undesirable to their teachers, rather than pupils with specific needs and for whom the special services were designed."

In another Office of Education bulletin—one dealing with both rapid and slow learners—the authors point out that "a central problem in our democratic school system is the instruction of pupils with widely diverse interests and capacities so that they will live and work together happily in a constructive social and spiritual environment."²⁶ This problem is complicated in the United States by our nation-wide efforts to increase the holding power of the school, to eliminate drop-outs, and to promote youth on the basis of social and chronological growth. "Although 'social promotion' policies are meeting resistance from some teachers in the upper grades of high school, there seems to be sufficient support of the practice to suggest that it will be continued," says the Government bulletin. The bulletin also stresses differences among communities in reference to this problem. "Just as each child is different from every other child, each community or local district has somewhat different population groups, cultural needs, and educational problems."

In their *New Hope for the Retarded* the Pollacks point out that the mentally and socially retarded are receiving more help than ever before:

These children are no longer grouped together as feeble-minded and dismissed at that. We now recognize that they have as many different facets to their personalities as normal children. These youngsters can today be defined as trainable or educable. The Mongoloid, the hydrocephalic, the cretin, the child with aphasia, the emotionally disturbed child, the child with a hysteria-fear neurosis, the child with an obsessive compulsive behavior pattern, the schizophrenic—all these types are now

²⁶ *Teaching Rapid and Slow Learners in High Schools*, U. S. Department of Health, Education, and Welfare, Office of Education Bulletin, No. 5 (Washington, D. C.: U. S. Government Printing Office, 1954).

recognizable and can be treated according to the pattern of their disorder and their individual personality differences. Today, all these many disorders and differences are being studied carefully in order that retarded children may be given new hope.²⁷

Exceptional Children in the Regular Class

As indicated earlier in this chapter, one of the significant developments in the education of exceptional children is the trend in recent years away from special, separate classes for the "handicapped" and others who deviate from the "normal," and the adoption instead of plans for dealing, as far as possible, with widely differing types of children together. This does not necessarily mean that special classes should cease to be provided. It does indicate (1) acceptance of the idea that institutionalizing children who are handicapped or different should be abandoned wherever possible in favor of special classes in local schools, and (2) that even the separateness of these special classes can profitably be modified. Dorothy Barclay sums up the situation succinctly in an article published at the opening of the 1954 school year:

Among the millions of children who flocked back to public schools this month are some half million "handicapped children"—the mentally slow, the crippled ones, children with speech defects, boys and girls who are deaf, near-deaf, the blind and the partially seeing, children with heart conditions or other special health problems, like epilepsy. These children will attend special classes in regular schools.

Growth in the number of such classes in public schools is good news for parents of handicapped children, even though the Federal Office of Education estimates that only about one youngster in five who needs such help is getting it. Even better news, we believe, is the trend toward giving many of these boys and girls short-term specialized instruction, then passing them on to regular classes.²⁸

Will mothers and fathers of so-called "normal" children welcome this change, Miss Barclay wonders, or will they resent it? For, as she says, notwithstanding all that has been done in recent years to promote surface acceptance, at least, of the mentally and physically handicapped, those who best know their problems repeatedly come up against instances of misunderstanding and prejudice on the part of school personnel and parents that can hamper the best of plans.

²⁷ Pollock, Morris P., and Miriam Pollock, *New Hope for the Retarded: Enriching the Lives of Exceptional Children* (Boston: Porter Sargent, 1953).

²⁸ Barclay, Dorothy, *New York Times Magazine* (September 19, 1954), p. 54.

There is need for "a positive public attitude," says Miss Barclay, "a change from the old pity, fear, and tearful sentimentality." She adds:

We can remember in our own elementary school days—in those supposedly Gay Twenties—how one almost tiptoed past the "crippled class" at school; how the girl in a wheel chair at her apartment window seemed a figure of reproach to those of us playing hopscotch on the city sidewalk—we never would have thought of going in to see her!—and how the odd little gray-faced boy who never went to school was whispered to be that way "because his mother didn't want him."

Most of today's parents, we suppose, had similar experiences when they were children. Memories like these, strong in emotion, may very well be at the base of probably well-meant but usually ill-founded resistance to the idea of having handicapped children in the same classes or at the same schools as those without such obvious problems.

Homogeneous Grouping

How far we can go in modern schools with "heterogeneous" grouping as opposed to "homogeneous" is still a much discussed question. Lyle M. Spencer, Director of Science Research Associates, sums up the arguments on both sides on the basis of materials gleaned from such national educational organizations as the Association for Supervision and Curriculum Development and the National Association of Secondary School Principals.²⁹

Those opposed to ability grouping maintain that children's abilities vary so greatly that it is impossible to consider even two children as "homogeneous." In any classroom of 30 or more, they point out, there usually is at least a four-year range in mental ages and as much as a five-year range in reading ability. Those in favor of ability grouping concede that absolute "homogeneity" cannot be achieved, but they feel that a narrowing of the ability range within the classroom is essential for effective teaching.

Opponents of ability grouping say that it is undemocratic to segregate students on the basis of ability; that it casts duller students into an "out-group," tends to make snobs of the gifted, and is generally harmful to the social development of both. Those in favor counter that there is little evidence of this; that on the contrary there is definite research evidence that heterogeneous grouping can create an even more damaging and undemocratic form of segregation—psychological

²⁹ Spencer, Lyle M., Science Research Associates: *Guidance News Letter* (April 15, 1955).

rather than physical—making misfits of youngsters at both poles of ability.

It should be noted, however, that in this comparison one important factor seems to have been left out—namely, abilities in other than “academic” areas. In present-day grouping arrangements it is necessary to take into account abilities and disabilities in many other aspects of “learning”—in painting, music, and other of the creative arts; in physical and mental health; in practical arts; in skill in human relationships.

Whatever the merits of the arguments for or against educating “exceptional” children in “regular” classrooms, Newland says, “regular class teachers can and must do certain things for exceptional children in their classes.” If, as is assumed, 85 per cent of our exceptional children are in regular classes at the present time anyway, what are some of the things we might do for them? Dr. Newland cites the work of the speech correctionist, who, he says, if he or she uses available time wisely, allocates a significant portion of it to the teachers from whom the handicapped subjects come, “helping them to learn to identify early those children who are in need of specialized help.” Under these conditions the classroom teacher does not become a specialist in speech correction—“she becomes, rather, a person who is a little more sensitive to some of the speech aspects of children’s behavior, a little more capable in dealing, under expert supervision where possible, with some of the simpler speech impairments.”³⁰

Gifted Children

Contrary to much popular belief, there is nothing necessarily “queer” about giftedness—intellectual or otherwise. “If conditions in the home, the school, and the community were always favorable to the optimum development of gifted children, these children would display few mental hygiene problems,” said Dr. Ruth Strang in opening a discussion of giftedness for the American Association for Gifted Children.³¹ But, she added:

Conditions are obviously not ideal; the needs of gifted children are not adequately met. Consequently, despite their superior insight and adapt-

³⁰ Newland, *op. cit.*

³¹ Strang, R., “A Symposium: The Gifted Child,” *Journal of Teacher Education*, Vol. 5, No. 3 (September, 1954).

ability, some gifted individuals are so disturbed emotionally that they fail to make a satisfying adjustment.

Almost all the problems of gifted children stem from normal or basic desires and needs which are denied normal satisfactions. Physical needs, emotional needs, and social needs should all be met if the child is to maintain a balanced total personality. When satisfactions are difficult or impossible to find, the child may resort to undesirable ways of meeting his needs—ways that set him apart from his fellows.

Before 1920, as Paul Witty has pointed out, it was rather generally believed that very bright and "gifted" children were eccentric, immature, and emotionally unstable.³² Indeed, some writers asserted that eccentricity and genius were inseparable, and others considered that the extent of genius was in direct proportion to the amount of instability. Actually, however, contrary to popular thought, the gifted child is usually not a weakling, not introverted, maladjusted, or emotionally unstable. As Terman, Oden, Witty, and others have repeatedly shown, he is on the whole physically stronger, socially more secure, and emotionally more stable when compared with children of his own chronological age. The reports show that "he is alert, more responsive, more eager to learn, is a better reader, and more critical of his educational offerings." But, also, "he is often a problem in the classroom in which his abilities are not challenged or stimulated." And the commentators agree that what is needed is a curriculum for the gifted child "that is challenging and rewarding."

Recent studies have upset some long-held popular notions as to the oddities of genius. Even superior mental endowment, usually thought of as the qualification for rating children as "gifted," may reveal contrasting characteristics in its expression: "The scientific, analytically ingenious, inventive child differs from the literary, generalizing, verbally expressive and retentive child. In adulthood the former becomes characteristically the experimental scientist, the latter the writer or lecturer."³³

Fortunately we now have much more accurate data on intellectual giftedness and what has happened to children classified in the original Terman studies as of superior intelligence. Data are now available

³² Witty, Paul, and Samuel W. Bloom, "Education of the Gifted," *School and Society*, 78 (October 17, 1953), pp. 113-119. See also *The Gifted Child*, American Association for Gifted Children (Boston: D. C. Heath & Co., 1951).

³³ Miles, Catharine Cox, in *Manual of Child Psychology* (New York: John Wiley & Sons, 1954), p. 1022.

from the 1921 period almost to the present. The work of Terman and Oden has been described as "probably alone in the history of research for its accomplishment of a planned study in verification of stated hypotheses."³⁴ A summary of the findings is as follows:

1. School children representative of the top 1 per cent of tested intelligence are as a group superior in other respects as well. They rate far above the average in physique, social adjustment, personality traits, school achievement, play information, and versatility of interests.
2. From childhood to maturity the gifted have continued to rate above average in health. The mortality rate has never reached the average expectancy for their age. Serious maladjustment has occurred less frequently in this group than in the general population. As adults the gifted are normal or superior in marital status and sexual adjustment. Their social and political attitudes are not deviant. Their war records are creditable, in many cases distinguished.
3. The gifted have been accelerated in school to an extent amounting to one year or a little more at high school graduation. Acceleration has proved to be associated with superior academic achievement, with more extensive college training, and with exceptional adult "success." It has not usually proved to be a handicap to social participation or personal adjustment.
4. In school achievement the gifted have been superior at every educational level. Many have remarkable educational records. Yet it is noteworthy that, contrary to the general trend, many individuals have failed to achieve academically at the level of their predicted competence.
5. Close to 90 per cent of the gifted have attended college, and almost 70 per cent are college graduates. Of the men 68 per cent and of the women 60 per cent have completed some graduate university work. This greatly exceeds the average among those with whom these individuals attended school in childhood.
6. In tested intelligence, the group as adults average about 1.0 SD above the average of college students, and about 2.0 to 2.5 SD above the average of the general population. Half of the gifted are very close to (probably within 4 percentile of) their original top status. Forty per cent have slipped somewhat more, although two-thirds of the group as a whole scored above the ninety-second percentile. Some 10 per cent have regressed to the eighty-fifth percentile or lower, if compared to adults in general.
7. In excellence of preparation and in vocational achievement the gifted are outstanding. Compared to any like-sized random selection of young adults the group as a whole has now produced many times the expected number of leaders in business and of competent profes-

³⁴ Terman, L. M. and M. H. Oden, *The Gifted Child Grows Up* (Stanford, Calif.: Stanford University Press, 1947).

sional men in engineering, law, medicine, college teaching, and other specialties. The least successful fifth of the gifted sample includes a few individuals seriously hampered by poor health or poor personal adjustment. The majority members even of this fifth, although less outstanding than the other four-fifths, compare favorably in their adult accomplishments with average college graduates.

8. The highest IQ's (170 plus) equalled or exceeded the gifted group as a whole in many respects. In college their records were more distinguished and more of them advanced farther in graduate study. As adults the men of the group achieved more notably. The highest IQ men have been about as well adjusted as the total gifted group; the women, perhaps somewhat less so.
9. The subjects of Jewish descent, although more often coming from homes of lower status than the average among the gifted, have surpassed the gifted Gentiles in achieving higher educational and occupational status. Relatively more of them have reached notable achievement as adults.

Answering the question as to whether gifted children develop "snobbishness, wrong attitudes, and social maladjustment if placed in separate classes," Hildreth and her associates answer in the negative. They cite a questionnaire study made in 1949 wherein teachers at Hunter College, where one of the best known programs for the gifted has been in operation, were asked whether they believed placement in a special school for the gifted made the children snobbish. Of the 21 teachers responding, two replied yes, 16 said no, and three were uncertain. One point made in the Hildreth report is that real harm may be done to a child if he tests high, is placed in the special class for the gifted, and is later found not to be highly gifted in learning ability.³⁵

What kind of education should there be for gifted children? Havighurst and his associates³⁶ say that a successful program for gifted children would be one that aimed at development of a variety of talents, since "it is one of the purposes of a democratic educational system to assist in the development of the constructive potentialities of its students, whatever these potentialities may be." Programs oper-

³⁵ Hildreth, G., and Florence N. Brumbaugh, *Educating Gifted Children* (New York: Harper & Brothers, 1952).

³⁶ Havighurst, Robert J., Eugene Stivers, and Robert F. DeHaan, *A Survey of the Education of Gifted Children*, Supplementary Educational Monographs, No. 83 (Chicago: University of Chicago Press, 1955). For a delightful light verse treatment of the problem, see Ethel Nicola and Dianne Witte, *The Rabbit with the High I.Q.* (New York: Teachers College, Columbia University, 1955).

ating on this basis would seek to develop such a variety of gifts as: (1) general intellectual ability (ability to think abstractly and do other kinds of relational thinking) and its various components, such as reasoning, verbal skill, mathematical skill, and spatial imagination; (2) ability in such useful areas as science, mechanics, social leadership, and human relations; (3) talent in creative arts, such as graphic art, music, creative writing, and dramatics. The Havighurst report places special emphasis on "motivation" of gifted children, maintaining it is largely lack of motivation that keeps half the ablest quarter of our youth from going to college and "robs us of at least half of the high-level talent that we might otherwise have"—such as in art and music. The group suggests three general procedures whereby a school can stimulate gifted children and help them to develop their abilities—enrichment (primarily a teaching procedure); special grouping; and acceleration (the latter two primarily administrative devices). As for enrichment:

The nature of the unusually capable student is such that enrichment in its most productive form consists not of adding more of the same kind of content and activity to the program, but of providing experiences in greater variety and at a more advanced level. Such a program may be characterized by (1) emphasis upon the creative or the experimental; (2) emphasis on the skills of investigation and learning; (3) independent work, stressing initiative and originality; (4) high standards of accomplishment; (5) cooperative planning and activity that provide opportunity for leadership training and experience in social adjustment; (6) individual attention given by teacher to student; (7) first-hand experiences; (8) flexibility of organization and procedure; (9) extensive reading, and (10) concern with community responsibility.

In a symposium discussion held in 1954 and participated in by Ruth Strang, Margaret Mead, Nelda Davis, Robert H. Roberts, Paul Witty, Lewis Terman, and Melita H. Oden,³⁷ Dr. Mead put the question of gifted children as follows: "What as educators can we do about recognizing and fostering those special, hereditary, discontinuous, incredible gifts which once in many centuries produce a Shakespeare, an Einstein, or a Leonardo da Vinci, an Abraham Lincoln, or a St. Thomas Aquinas, and without whom a society, no matter how rich and industrious, will stagnate in the end?"

Dr. Strang said that to be prepared for their responsibility in the

³⁷ "Symposium: The Gifted Child," *Journal of Teacher Education*, Vol. V, No. 3 (September, 1954).

education of gifted children teachers need to understand: (1) who the gifted children are and how to identify them early; (2) how they are influenced by the contemporary culture and other environmental factors; (3) what their characteristics are, how they learn—what is the psychology of gifted children; (4) what kind of education will best meet their needs; (5) how may institutions for the education of teachers prepare their students to help gifted children realize their potentialities; and (6) what are some of the main issues and problems in the education of the gifted.

Dr. Terman and Miss Oden felt that about the only feasible kinds of special opportunity for gifted children in school under present conditions of teacher shortage and overcrowded classrooms prevalent in most communities were three: (1) segregation in special classes; (2) parallel classes for fast, medium, and slow learners, and (3) acceleration.

In a study of the gifted child in the regular classroom, Marian Scheiffle³⁸ concluded that the focal point and the primary objective must always be the *gifted child's full development*. Early identification, stimulation, and cultivation of creativeness are necessary; home, school, and community must cooperate in providing "for fullest growth from early childhood to maturity." Underlying the whole program, this investigator finds, "is the basic precept that the gifted child is first of all a person, possessing all the drives that motivate people in general." He needs, therefore, "affection, acceptance, recognition, and security" just as much as he needs the "opportunity" for self-development.

In its report on the gifted the Educational Policies Commission said:

A considerable proportion of the potential abilities of gifted individuals is at present lost to society through underdevelopment, under-use, or misuse. Some of this waste is attributable to economic barriers to educational and vocational opportunities. Some is caused by social attitudes that tend to lower both incentive and opportunity for gifted children of families with low economic status. Some loss results from mental illness and emotional maladjustment. And some human talent is wasted because the schools fail to identify, to challenge, to hold, or to educate adequately some of their gifted students.³⁹

³⁸ Scheiffle, M., *The Gifted Child in the Regular Classroom* (New York: Teachers College, Columbia University, 1953).

³⁹ Educational Policies Commission, *Education of the Gifted* (Washington, D. C.: National Education Association, 1950).

QUESTIONS AND EXERCISES FOR
DISCUSSION AND STUDY

- 1 • Are you accustomed to thinking of "exceptional" children as including all the different categories mentioned in this chapter? Why, for example, are "gifted" children included as "exceptional"?
- 2 • If you can do so without embarrassment, try to find out whether people you know who have so-called physical handicaps—blindness, deafness, weak heart, and so forth—are subject to any special emotional difficulties.
- 3 • Discuss Beatrice Hurley's statement that it is essential to realize that "the handicapped child is a person." What are its implications for education?
- 4 • Which of the three types of education of blind children recognized by the American Foundation for the Blind would be the most satisfactory for any individual blind children of your acquaintance? What is your impression from reading the cases Dorothy Campbell presents of blind children in the normal classroom?
- 5 • From your own experience with people who have hearing difficulties, do you find yourself in agreement with Valerie Hunt's statement that "there is no evidence that deafness causes any particular personality pattern," but that "there are many emotional effects of deafness upon a person in his efforts toward self-improvement"?
- 6 • Do you know personally any cases, like those cited in the chapter, of individuals who have made very acceptable adjustments in spite of physical or other handicaps? To what do you attribute their success?
- 7 • Do you know of any experiences similar to those of Mary and Tommy, as told in the Children's Bureau booklet?
- 8 • What do you understand by "retardation"? Did you go to a school where there was "homogeneous" or "ability" grouping? What are the emotional implications of it, good or bad?
- 9 • Do you agree with Elizabeth Lockwood's statement that, with regard to physically handicapped children, "whenever it is possible to have these adolescents in the regular school, participating in the typical curriculum, it is better to do so—from the standpoint of the child, the school, and the community?"
- 10 • Would you yourself prefer to teach in a school where "homogeneous" grouping was practiced, or in one where, for the most part, "heterogeneous" grouping was accepted as the normal procedure?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Abraham, W., *A Guide for the Study of Exceptional Children*. Boston: Porter Sargent, 1956.
- Adolescent Exceptional Child: *A Realistic Approach to Treatment and Training*. Langhorne, Pa.: The Woods Schools, 1954.
- American Association for Gifted Children, *The Gifted Child*. Boston: D. C. Heath and Co., 1951.
- Baker, H. J., *Introduction to Exceptional Children*. New York: The Macmillan Co., 1944.
- Child Research Clinic of the Woods Schools, *New Contributions of Science to the Exceptional Child*. Langhorne, Pa.: The Woods Schools, 1935 to date.
- Cruikshank, W. (ed.), *Psychology of Exceptional Children and Youth*. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1955.
- Cutts, Norma E., and Nicholas Moseley, *Teaching the Bright and Gifted*. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1957.
- Dolch, E. W., *Helping Handicapped Children in School*. Champaign, Ill.: Garfield Press, 1948.
- Educational Policies Commission, *Education of the Gifted*. Washington, D.C.: National Education Association, 1950.
- Emotional Problems Associated with Handicapping Conditions in Children, Children's Bureau Publication, No. 336. Washington, D.C.: U.S. Government Printing Office, 1952.
- Exceptional Child Faces Adulthood. Langhorne, Pa.: The Woods Schools, 1955.
- Frampton, M. E., and E. D. Gall (eds.), *Special Education for the Exceptional*. Boston: Porter Sargent, 1956. In 3 volumes: I. *Introduction and Problems*; II. *The Physically Handicapped and Special Health Problems*; III. *Mental and Emotional Deviates and Special Problems*.
- *Resources for Special Education*. Boston: Porter Sargent, 1956.
- Gesell, A. L., "Genius, Giftedness, and Growth," in *Studies in Child Development*. New York: Harper & Bros., 1948.
- Getz, Steven, *Environment and the Deaf Child*. Springfield, Ill.: Charles C. Thomas, 1953.
- Hathaway, W., *Education and Health of the Partially Seeing Child*. New York: Columbia University Press, 1954.
- Havighurst, R. J., E. Stivers, and R. F. DeHaan, *A Survey of the Education of Gifted Children*. Chicago: University of Chicago Press, 1955.
- Hayes, E. N., *Directory for Exceptional Children: Schools—Services—Other Facilities*. Boston: Porter Sargent, 1956.
- Helping Delinquent Children*, Children's Bureau Publication, No. 341. Washington, D.C.: U.S. Government Printing Office, 1953.
- Hildreth, G., *Educating Gifted Children*. New York: Harper & Bros., 1952.

- Hill, A. S., *The Forward Look: The Severely Retarded Child Goes to School*, U.S. Office of Education Bulletin, 1952, No. 11. Washington, D.C., U.S. Government Printing Office, 1953.
- Hodgson, K. W., *The Deaf and Their Problems*. New York: Philosophical Library, 1954.
- Hunt, V. H., *Recreation for the Handicapped*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.
- Johnson, W., *Speech Handicapped School Children*. New York: Harper & Bros., 1948.
- Kirk, S. A., and R. L. Erdman, *Education of Mentally Handicapped Children*. Urbana, Ill.: University of Illinois, 1948.
- Lowenfeld, B., *Our Blind Children. Growing and Learning with Them*. Springfield, Ill.: Charles C. Thomas, 1956.
- Mackie, R. P., *Crippled Children in School*, U.S. Office of Education Bulletin, 1948, No. 5. Washington, D.C.: U.S. Government Printing Office, 1948.
- and E. Cohoe, *Teachers of Children Who Are Partially Seeing*, U.S. Office of Education Bulletin, 1956, No. 4. Washington, D.C.: U.S. Government Printing Office, 1956.
- National Society for the Study of Education, *The Education of Exceptional Children*. Chicago: The Society, 1950.
- Nicola, E., and D. Witte, *The Rabbit with the High I.Q.* New York: Teachers College, Columbia University, 1955.
- Pollock, M., and M. Pollock, *New Hope for the Retarded*. Boston: Porter Sargent, 1953.
- Preschool Child Who is Blind*, Children's Bureau Folder No. 39. Washington, D.C.: U.S. Government Printing Office, 1953.
- Scheiffe, M., *The Gifted Child in the Regular Classroom*. New York: Teachers College, Columbia University, 1953.
- Schonell, F. E., *Educating Spastic Children*. New York: Philosophical Library, 1956.
- "Slow-Learning Group in a Large City Senior High School," in *Creating a Good Environment for Learning*, the 1954 yearbook of the Association for Supervision and Curriculum Development. Washington, D.C.: National Education Association, 1954.
- Stacy, Chalmers L., and Manfred F. Martino (editors), *Counseling and Psychotherapy with the Mentally Retarded*. Glencoe, Illinois: The Free Press, 1957.
- Teaching Rapid and Slow Learners in High Schools*, U.S. Office of Education Bulletin, 1954, No. 5. Washington, D.C.: U.S. Government Printing Office, 1954.
- Terman, L. M., and M. H. Oden, *The Gifted Child Grows Up*. Stanford, Cal.: Stanford University Press, 1947.
- Van Riper, C., *Stuttering*. Chicago: National Society for Crippled Children and Adults, 1948.

- Wallin, J. E. W., *Children with Mental and Physical Handicaps*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1949.
- Wishik, S. M., *How to Help Your Handicapped Child*, Public Affairs Pamphlet, No. 219. New York: Public Affairs Committee, 1955.
- Witty, P., and S. W. Bloom, "Education of the Gifted," *School and Society*, 78 (October 17, 1953), pp. 113-19.

16

MENTAL HYGIENE

Mental hygiene has to do primarily with the development of more wholesome human relationships. It means applying to everyday living what has been learned with regard to the behavior of human beings. On the negative side, it has been concerned with more humane and intelligent care and treatment of the mentally ill. Positively, it has meant the early discovery of mental and emotional difficulties, the prevention of as much threatened serious illness and disorder as possible, and the provision of healthful living for the greatest conceivable number of individuals as members of a modern society. For teachers, social workers, and others whose daily activities have to do with children, youth, and other human beings, mental hygiene involves not only a better understanding of human growth and development with respect to those with whom they work, but also an understanding of the worker's own personality and his own relationship to his family, associates, school, and community.

Initially, the National Institute of Mental Health evaluation report points out, "mental hygiene efforts were focused on improving the care of the mentally ill." This was in keeping with the individual concept of disease process. Subsequently, however, emphasis shifted to include exploration of the field of prevention, with many and varied programs geared in that direction. "It was here that the term 'mental hygiene' became popular, and its usage spread to other parameters of health and disease, so that even yet it is often utilized in an undefined manner to label areas other than those of prevention."¹

Dr. Fillmore Sanford, executive secretary of the American Psycho-

¹ *Evaluation in Mental Health: A Review of the Problem of Evaluating Mental Health Activities*, Report of the Subcommittee on Evaluation of Mental Health Activities, Community Services Committee, National Mental Health Advisory Council (Washington, D.C.: U.S. Government Printing Office, 1955).

logical Association, speaks of "creative health" as the need and possibility of the modern day:

Already there is afoot a very significant and visible mental health movement. We are successfully directing public attention to the "nation's number one health problem." We are trying to recruit and train a vastly increased number of professional people to help us deal with mental illness. The national and state governments are pouring millions of dollars annually into mental hospitals and into programs of research and training. Society has recognized mental health as a problem and has begun to marshal resources to do something about it.²

But, says Dr. Sanford, we are moving into the phase of prevention of mental illness. "Both professionals and laymen talk more and more often about the 7,000,000 living Americans who may be future candidates for admission to our mental hospitals. Occasionally we hear a kind word said for the 70,000,000 or more living Americans who may not be living up to their own best psychological snuff, who are tied in emotional knots, who cannot handle well their vocational or marital or child-raising problems, who somehow get along in life but in a limping, low-octane way which they do not like at all." And, he adds, the creative phase may not be too far away, after all: "Parents and teachers and ministers by the tens of millions are already actively involved in attempts to promote creative behavioral health—or creative behavioral vitality."

Two social scientists of the Hogg Foundation for Mental Health, adapting a concept presented by Lawrence K. Frank, say that a mentally healthy person is one who has problems and meets them with confidence and skill. His interpersonal relations are conducted with generosity and dignity. He has the ability to respond with feelings appropriate to his stage of development. He has the facility to integrate his group experience with his own unique individual capacities so that he may be creative and productive in his living."³

"For the first component of healthy personality I nominate a sense of basic trust," says Erik Erikson, "which I think is an attitude toward oneself and the world derived from the experience of the first year of life. By 'trust' I mean what is commonly implied in reasonable

² "Creative Health and the Principle of Habeas Mentem," *American Journal of Public Health*, 46 (February, 1956), pp. 139-48.

³ Moore, Bernice M., and Robert L. Sutherland, *Texas Trends in Mental Health* (Austin, Texas, Hogg Foundation for Mental Hygiene, 1954). See also *Annals of the American Academy of Political and Social Sciences* (March, 1955).

trustfulness as far as others are concerned. When I say 'basic' I mean that neither this component nor any of those that follow are 'worn on the sleeve' either in childhood or in adulthood; they are not, indeed, especially conscious. In fact, all of these criteria, when developed in childhood and when integrated in adulthood, blend into the total personality in such a way that little more than a particular 'glow' remains visible."⁴

What is mental health? There have been all kinds of attempts to define and explain the term. The National Association for Mental Health says that some of the characteristics of people with good mental health are:

1. *They feel comfortable about themselves:* They are not bowled over by their own emotions; they can take life's disappointments in their stride; they have a tolerant attitude toward themselves as well as others; they can laugh at themselves; they neither underestimate nor overestimate their abilities; they can accept their own shortcomings; they have self-respect; they feel able to deal with most situations that come their way; they get satisfaction from the simple, everyday pleasures.
2. *They feel right about other people:* They are able to give love and to consider the interests of others; they have personal relationships that are satisfying and lasting; they expect to like and trust others, and take it for granted that others will like and trust them; they respect the many differences they find in people; they do not push people around, nor do they allow themselves to be pushed around; they can feel they are part of a group; they feel a sense of responsibility to their neighbors and fellow men.
3. *They are able to meet the demands of life:* They do something about their problems as they arise; they accept their responsibilities; they shape their environment whenever possible—they adjust to it when necessary; they plan ahead but do not fear the future; they welcome new experiences and new ideas; they make use of their natural capacities; they set realistic goals for themselves; they are able to think for themselves and make their own decisions; they put their best effort into what they do, and get satisfaction out of doing it.

Mental health has to do with everybody's everyday life, say the mental health authorities. "It means the over-all way that people get along—in their families, at school, on the job, at play, with their asso-

⁴ *Growth and Crises of the Healthy Personality* (New York: Josiah Macy, Jr. Foundation, 1950).

ciates, in their communities. It has to do with the way each person harmonizes his desires, ambitions, abilities, ideas, feelings, and his conscience, in order to meet the demands of life as he has to face it." ⁵

The mental health movement, Margaret Mead told the International Seminar at Chichester, England, in 1952, "is based on the belief that we have no more begun to tap the full possibilities of human development than we have begun to tap the resources of the rest of the natural world, and that, just as the results of scientific inquiry can enable us to grow twenty bushels of wheat where two grew before, or to travel as far in a day as we once did in two months, so also by increasing our knowledge of human behavior and applying that knowledge responsibly, we can draw on the great untapped sources of human potentiality." ⁶

Extent of Mental Ill Health

That relatively few persons achieve the recognized mental health objective, and that "effective behavior and personal happiness" do not ensue for vast numbers of human beings, is only too evident. Man has by no means mastered the elements of a satisfying existence for himself and his fellow-men. He has not even used to any appreciable extent the folk wisdom, the spiritual insight, or the scientific knowledge already available to him for this purpose.

How serious and widespread mental illness and emotional disorder really are is still not generally understood. Mention has already been made of the amount of institutional provision required. The approximately 700,000 hospital beds available to care for the mentally ill and "insane" are more than are necessary for all other types of illness. This does not take into account the vast numbers of those who, though not in institutions, are nevertheless the despair of their families and friends because of their inability to cope with modern conditions of living. The late William A. White, for many years head of St. Elizabeth's Hospital in Washington, D.C., once remarked that mental hygiene would not mean much until it affected not only the

⁵ This and similar material available from the National Association for Mental Health, 10 Columbus Circle, New York 19, N.Y., and from State mental health associations; also from the U.S. Public Health Service, National Institute of Mental Health, Bethesda 14, Maryland.

⁶ Mead, M., "Technological Change and Child Development," *Understanding the Child*, 21 (October, 1952), pp. 109-12.

more obvious difficulties of the seriously maladjusted, but also the way of life for all people. Indeed, the scope of mental ill health may be said to embrace every form of human conflict, "from war on the international scene to gloom at the breakfast table."

Experience with draftees in World War II furnished dramatic evidence of the amount of mental ill health in the general population. Approximately 8 per cent of those called up for service were rejected as mentally and emotionally unfit; and of those in the armed services discharged before the close of the war, more than a third were neuropsychiatric cases.⁷

Findings in the studies of mental health of school children have likewise been alarming. Studying 1,500 children in an Ohio county in 1946, Mangus and Seeley found that about one in every five elementary school pupils showed evidence of poor mental health of varying degrees of seriousness. "Large numbers of these children are evidently maladjusted to a very serious degree and are in grave need of specialized guidance service to meet their mental health needs," they concluded.⁸ A Canadian study made at about the same period found serious mental health problems in both elementary and secondary schools.⁹

In a very fundamental sense, the UNESCO report on education and mental health says, "the whole of mental health turns upon the solutions sought and found to the twin problems of maintaining personal security and of moving forward to resolve the continual challenges presented by the environment." In the cultural or social sense, the report points out, there are likely to be as many definitions of mental health as there are different ways of life. But it is possible to base certain principles of mental hygiene upon our developing knowledge of human psychological needs, and on evaluation of the means of satisfying them. "What distinguishes a response which is healthy in terms of future stability from one which mitigates against mental health is whether it in general brings the child into an acceptable and

⁷ Carroll, H. A., *Mental Hygiene: The Dynamics of Adjustment* (Englewood Cliffs, N.J.: Prentice-Hall, Inc. 1947). Also Rennie, T. A. C., and L. E. Woodward, *Mental Health in Modern Society* (New York: Commonwealth Fund, 1948).

⁸ *Mental Health of Rural Children in Ohio* (Columbus, Ohio: Ohio Agricultural Experiment Station, 1949).

⁹ National Committee for School Health Research, Report No. 2 (Toronto).

satisfactory relationship with his environment or tends to withdraw him from it." ¹⁰

Education and Mental Health

"Of the many challenges hurled at teachers," says Harold Bernard, "none transcends that of making the most of our rich human assets—of keeping children and youth mentally, physically, and spiritually sound. This is the challenge and the opportunity offered by the mental hygiene viewpoint." ¹¹

There has been significant recognition in recent years of the importance of the schools in furthering mental health. Dr. Alan Challman, writing on the role of the school, says: "There are a vast number of ways in which a society's mental health may be improved, but I believe that in a democracy the most basic of these and the one which must carry the leading role is found in our school systems. This is not only because the school is the social agency having most to do with the shaping of children's personalities, instilling personal standards, and providing techniques for dealing with reality, but also because educators are on the whole far advanced beyond the rest of the population in recognizing the importance of childhood experiences in promoting or hindering life adjustment patterns." ¹² The promotion of mental health is not the responsibility alone of those who classify themselves as members of the mental health professions, says Dr. Robert H. Felix, Director of the National Institute of Mental Health. Dr. Felix points out that all the functioning groups by which a community supports and sustains itself have an impact upon the mental health of the community. "The schools have long been recognized," he says, "as an influence second only to the home in determining the degree to which our citizens achieve that adult goal which the layman calls adequacy or happiness or self-sufficiency and which the psychiatrist calls maturity." ¹³ As part of the evidence of the school's sensitivity to this responsibility, Dr. Felix cites the increasing utilization

¹⁰ Wall, W. D., *Education and Mental Health* (Paris, UNESCO, 1955).

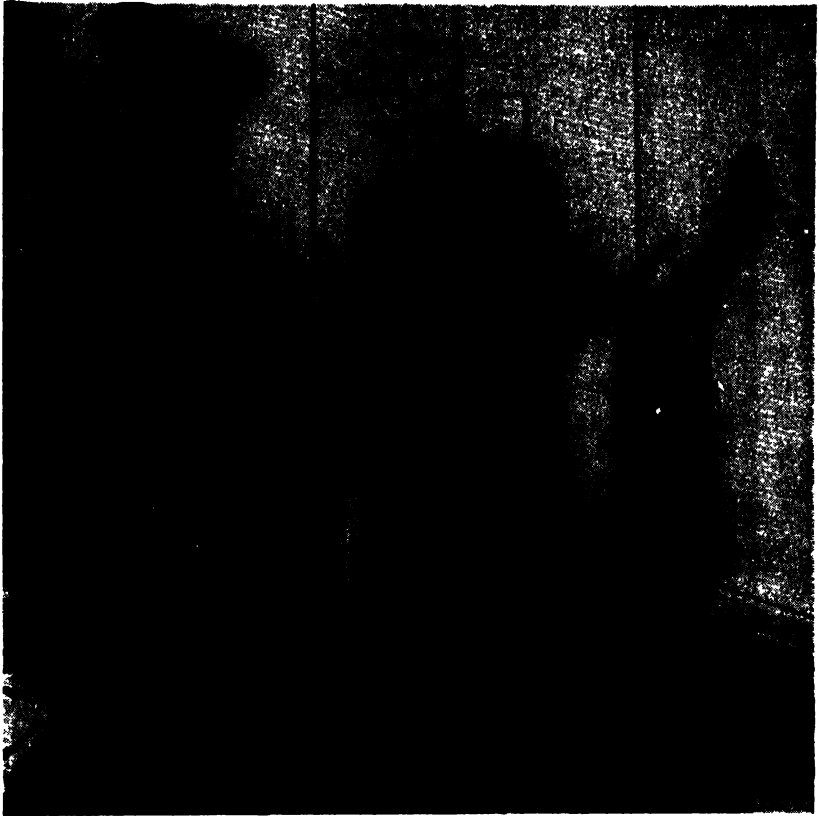
¹¹ Bernard, H., *Mental Hygiene for Classroom Teachers* (New York: McGraw-Hill Book Co., 1952).

¹² Challman, A., "The Role of the School in Mental Hygiene," *Bulletin of the Menninger Clinic*, 13 (March, 1949), pp. 47-54.

¹³ Felix, Robert H., in *School Psychologists at Mid-Century* (Washington, D.C.: American Psychological Association, 1955).

by the schools of such specialized personnel as counselors, school social workers, guidance personnel, and school psychologists.

The educational system is ready now to include programs for the



Under wise guidance this pupil will not develop an emotional blocking to learning. (Courtesy of Speech Department, Southern Illinois University.)

promotion of healthy emotional development as part of the regular curriculum. One area in which the psychiatrists can be helpful is in the training of the teacher, either in the student days or afterward as an in service function:

By active participation the psychiatrist may help the teacher to extend his insight into human growth, development, and the varieties of be-

havior; to include understanding and appreciation of the multiple causes of behavior; and thus encourage him to apply this knowledge in his relations with the school child. Conflicts between the teacher and his pupils lessen as the teacher acquires more understanding. With better understanding he becomes more capable of appreciating and handling the problems of the child. . . . In turn the behavior of the child changes and a more desirable relationship develops.¹⁴

Still another area in which the psychiatrist can assist the educator, according to this GAP report, is "by active collaboration in those projects which are oriented toward influencing the mental health of the child." The four projects studied in this report were the Bullis project in Delaware, the Force project in Toms River, New Jersey, the Ojemann project at the University of Iowa, and the Forest Hill Village project, Toronto, Canada.

Concern for mental health in schools is not new; it goes back to the earliest efforts at teacher training in the United States. When Cyrus Peirce, head of the first public normal school in New England (1839), was seeking candidates for his program, he begged the local school committees to send him persons possessed of "good health, a vigorous and buoyant constitution, and a fund of lively, cheerful spirits, the habit of self-government, and of subjecting their own actions to the test of moral and religious principles," and particularly "a love of and sympathy with children." And some years later, explaining to Henry Barnard what he had tried to do in his normal school, Peirce said it had been his aim, and would be his aim if he had to do it over again, to make "better teachers, teachers who would understand, who should know more of the nature of children, of youthful development," teachers who would substitute for the prevailing discipline of the rod "higher and purer motives of action," through which children would be trained "in such harmony and proportion as would result in the highest formation of character."¹⁵

Unfortunately this concern for child development on the part of Peirce and other educational leaders of a century or more ago (for Peirce was by no means alone in this) did not continue in the years that followed. With the expansion of school facilities, the emphasis came to be heavily on the mechanics of schooling—on skills and fac-

¹⁴ Committee on Preventive Psychiatry of the Group for Advancement of Psychiatry, Report No. 18 (January, 1951).

¹⁵ For further details of the historical development see "History of Mental Hygiene in the School," *American Journal of Psychiatry*, Vol. 100 (April, 1944).

tual materials, on "grades" and "promotions," on "school keeping." Even in the first stages of the scientific study of education—from 1900 on—attention tended to be centered on the more readily measurable aspects of school education—the school plant, length of the school term, progress through the "grades," courses of study, the amount in years of teacher training. Health was listed as important, but it was still thought of almost exclusively as physical health, and it did not enter functionally into much of the work of the school. Modern educational measurement came into the picture with Binet, Terman, Thorndike, and many others, but even "educational psychology,"—that part of the program of teacher preparation one might assume to be most directly applicable to teaching as a human enterprise—was mainly occupied with "learning" in the restricted academic sense rather than with what happens to human beings in life situations in or out of school. Indeed, for a period it seemed as though the wide use of group intelligence and achievement tests, instead of proving helpful, might even defeat efforts to build up a scientific study of human beings that would take emotional and social factors into account.

Modern interest in mental health in schools parallels rather closely the development of the National Committee for Mental Hygiene—now the National Association for Mental Health. In the first days of the Committee's work, Dr. William A. White and others referred to childhood as "the golden period for mental hygiene." The roots are observable in various other educational movements of the first quarter of the twentieth century, however; in vocational guidance as initiated by such men as Frank Parsons of Boston (1907); in the Commonwealth Fund studies of delinquency, which were especially concerned with behavior problems in the school; in the child guidance clinics, with their close contacts with the schools; in the visiting teacher movement, which demonstrated the value of case workers serving between home and school; in the growth of the junior high school, with its effort to meet the needs, interests, and abilities of all youth, instead of catering to those financially and academically acceptable for conventional secondary schooling; in the child development centers at such places as the University of Iowa and the Merrill-Palmer School; in the work of the Progressive Education Association, initiated by Charles William Eliot, John Dewey, and others, whereby parents in revolt against the lockstep schooling of the nineties and

early nineteen hundreds sought to set up less formal educational opportunities that assured happy, wholesome childhood and rich artistic and emotional experience as fundamental in education; in the nursery school, where, with no preconception as to what a "school" should be, attention was given to the growth and development of children, rather than to the acquisition of subject matter; in such an organization as the Child Study Association of America, which pioneered in bringing mental hygiene into the work of both parent and school groups; in changes in the concept and practice of teacher education as exemplified by Teachers College, Columbia University, whereby teachers (especially elementary school teachers) have increasingly been prepared for their task by better understanding of child life and the relation of the school to the needs of the individual and to society.

In 1931 the Massachusetts Society for Mental Hygiene began the publication of a quarterly journal, *Understanding the Child*, devoted to the task of interpreting to teachers the findings of modern science with regard to human behavior, and in 1937 the magazine achieved national status as a publication of what was then called the National Committee for Mental Hygiene. In the first issue of the journal published by the national organization, Dr. Clarence M. Hincks emphasized the fact that education and mental hygiene have identical aims, and that "insofar as teachers gain an understanding of themselves and of children under their care, and insofar as they create a favorable atmosphere for wholesome growth, our children will become better equipped to face the exigencies of life, and there will result a diminution of delinquency, dependency, mental disabilities and other social ills."

The mental hygiene approach to problems of youth was strongly emphasized in a series of important educational studies during the thirties, most of them made possible by the Rockefeller Foundation General Education Board. The Commission on Secondary School Curriculum, a commission of the Progressive Education Association, began its work in 1932. It set up a "study of adolescents" for the purpose of providing "basic information on the problems, interests, concerns, and inclinations of young people in reaction to the situations which confront them in home, school, community, and the wider social scene." Findings of the study were made available to the committees of the Commission working on the various areas of in-

struction in the secondary school; were communicated to the schools cooperating in the "eight-year-study" of the relation of school and college through summer workshops and in other ways, and were eventually published in book form for the use of educational workers generally.¹⁶ Another important project was that of the Commission on Human Relations, which undertook through a series of publications and later through motion pictures to help youth and workers with youth to understand the contributions of modern science and scholarship to a study of emotional and social problems.¹⁷ Still another report from this same group was that of a special committee on the "personal-social development of boys and girls," in which members of the committee stated that they had been convinced from their study that "for many boys and girls their development in relation to people is thwarted and their resulting emotional tensions are expressed in fears, hatred, and compulsive behavior toward society," and that the schools have a definite responsibility in such matters.¹⁸

Particularly significant of the interest developing in mental hygiene in schools was the report made to the American Council on Education in 1938 by the Council's committee on the "relation of emotion to the educative process."¹⁹ The committee urged that persons in contact with children in the schools be thought of as personnel workers rather than as teachers, and that they be selected for their skill in getting along with children, rather than primarily on the basis of their erudition, disciplinary ability, or "knowledge of teaching techniques."

A Commonwealth Fund study published at this same period²⁰ sought to ascertain, through field inquiry, how educational practice "squared with what is known of mental hygiene," and what further advances could be made. The report emphasized particularly the

¹⁶ Zachry, Caroline, *Emotion and Conduct in Adolescence* (1940); Peter Blos, *The Adolescent Personality* (1941); V. T. Thayer et al., *Reorganizing the Secondary School Curriculum* (1939).

¹⁷ For example, *Life and Growth*, by Alice V. Keliher (New York: Appleton-Century, 1938).

¹⁸ Meek, Lois Hayden et al., *The Personal Social Development of Boys and Girls* (New York: Progressive Education Association, 1940).

¹⁹ Prescott, Daniel A., *Emotion and the Educative Process* (Washington, D.C.: American Council on Education, 1938).

²⁰ Ryan, W. Carson, *Mental Health Through Education* (New York: Commonwealth Fund, 1938).

possibilities for mental health in the everyday work of the school—in program, method, attitude of teachers, and administration. Among the steps listed as essential in achieving better mental health through the schools were: A refacing of the educational task whereby fundamental human needs would be put first; insistence upon a better “emotional climate” in schools; a radical change in the methods of selection and preparation of teachers and administrators to emphasize “cultural resourcefulness, understanding of human behavior, and direct contact with children”; an enriched and flexible curriculum, with ample attention to the arts and other creative opportunities; a new type of school administration that would be concerned with growth and development of human beings; extension of the nursery school to all parts of the population; active collaboration by the school with community agencies working for mental health.

Mental health was also stressed in the work of the Commission on Teacher Education. The first general report of the Commission, 1944,²¹ indicated clearly the emphasis on mental hygiene in the preparation of teachers:

Teachers for our times should believe in freedom and the worth of each growing personality. . . . We must seek to develop teachers capable of spontaneous self-expression disciplined by responsiveness to the facts of physical and social environment. . . . The teacher's job is to help children to learn. This is a highly personal business, involving as it does the personalities both of teacher and of taught. . . . Good teaching requires a favorable relationship with children and an understanding of their natures and personalities. But while a friendly attitude toward children is basic to excellence in teaching, it is not by itself enough. It needs to be supported by understanding and insight respecting human growth and development.

Mental health has a greater and more positive part to play in the schools than merely attempting to reduce the incidence of mental illness in the United States, Rivlin points out. There is a positive task: “In its concern with those children who are already giving evidence of serious emotional disturbance, the schools should not ignore all the other children who should be helped to attain a more wholesome state of mental health so that they can develop into mature,

²¹ Commission on Teacher Education, *Teachers for Our Times* (Washington, D.C.: American Council on Education, 1944).

responsible, and well-adjusted adults. Like those who are concerned with physical hygiene, mental hygienists today are aiming at the improvement of mental health rather than at merely the prevention of illness.”²² Research on childhood emotional development has demonstrated that there are significant possibilities for prevention of mental disorders and the correction of emotional disturbances in childhood. This procedure, in which schools and teachers are so vitally concerned, is limited, however, at present by the lack of sufficient child guidance clinics, school guidance programs, and counseling services.

Teachers and Children's Behavior

How well do teachers understand the behavior of children and youth? Is the understanding such as to help produce good emotional climate in the classroom?

These are questions that have been asked many times, especially in the light of the classic study made by E. K. Wickman in 1928.²³ Wickman's study showed that teachers in the schools he studied were disposed to regard as important types of “misbehavior” those acts of children that were annoying to the peace and quiet of the classroom, and to regard as relatively unimportant those types of conduct that mental hygienists who studied the same situations regarded as much more serious for possible future mental and emotional difficulty. Out of 50 behavior problems submitted to them, the teachers ranked the upper 10 as follows: (1) heterosexual activity; (2) stealing; (3) masturbation; (4) obscene notes; (5) untruthfulness; (6) truancy; (7) impertinence, defiance; (8) cruelty, bullying; (9) cheating; (10) destroying school property.

To what extent have the attitudes of teachers changed since the days of Wickman's report? In 1952 Stouffer repeated Wickman's questionnaire with 481 elementary school teachers, and then, as Wickman had done, submitted the same list of behavior problems to 70 workers in child guidance clinics, with the following results:

²² Rivlin, Harry N., in *Mental Health in Modern Education: Schools*, 54th Yearbook of the National Society for the Study of Education (Chicago: University of Chicago, 1955).

²³ Wickman, E. K., *Children's Behavior and Teachers' Attitudes* (New York: Commonwealth Fund, 1928).

Upper Ten Teachers	Lower Ten Teachers
<ol style="list-style-type: none"> 1. Stealing 2. Cruelty, bullying 3. Heterosexual activity 4. Truancy 5. Unhappy, depressed 6. Impertinence, defiance 7. Destroying school materials 8. Unreliableness 9. Untruthfulness 10. Disobedience 	<ol style="list-style-type: none"> 41. Attracting attention 42. Slovenly appearance 43. Restlessness 44. Tardiness 45. Disorderliness in class 46. Tattling 47. Inquisitiveness 48. Interrupting 49. Imaginative lying 50. Whispering
Clinicians	Clinicians
<ol style="list-style-type: none"> 1. Unsocial, withdrawing 2. Unhappy, depressed 3. Fearfulness 4. Suspiciousness 5. Cruelty, bullying 6. Shyness 7. Enuresis 8. Resentfulness 9. Stealing 10. Sensitiveness 	<ol style="list-style-type: none"> 41. Carelessness 42. Masturbation 43. Impudence 44. Inquisitiveness 45. Disorderliness in class 46. Tardiness 47. Interrupting 48. Profanity 49. Smoking 50. Whispering

It should be noted that in this study teachers were asked to list the problems in order of seriousness from the standpoint of classroom management, whereas the mental hygienists (clinicians) listed them with reference to "how serious they were for the future of the child."²⁴

Working with teachers in a graduate course entitled *Mental Hygiene for Teachers* at the University of Illinois, Gaier and Jones gave each member of the course a questionnaire with the following directions:²⁵

In order of importance, list the ten classroom behaviors that you feel warrant investigation in this course. Briefly state your reason for each selection.

This was followed by spaces for writing in the problems and reasons:

²⁴ See the following, among other sources: Buhler, C., Smither, F., Richardson, S., and F. Bradshaw, *Childhood Problems and the Teacher* (New York: Henry Holt, 1952); *Elementary School Guidance*, Detjen, E., and Detjen, N. (New York: McGraw-Hill, 1952); and *Mental Health in Education*, Lindgren, H. C. (New York: Henry Holt, 1954).

²⁵ Gaier, Eugene L., and Stewart Jones, "Do Teachers Understand Classroom Behavior?" *Understanding the Child*, 20 (October, 1951), pp. 104-09.

Behavior	Reasons
1. _____	1. _____

All but four of the 96 students were teachers enrolled in summer school work in the College of Education. They ranged in age from 19 to 53 and in teaching experience from less than a year to 31 years. There were 690 problem behaviors listed by the teachers, and "the problems reported evidenced a great qualitative range—from tapping pencils on desks to physical attacks on the teacher." The ten most frequently reported behaviors are listed in the following table:

TABLE 2. Ten most frequently mentioned behaviors that teachers thought should be considered in a course in mental hygiene.

Behavior Problem	Men		Women		Combined	
	No.*	%†	No.*	%†	No.*	%†
Lack of Interest—Indifference	53	27.0	29	20.1	82	24.0
Cutting Up—Boisterous Behavior	27	13.7	16	11.1	43	12.6
Below-Capacity Schoolwork	21	10.6	14	9.8	35	10.3
Defiance of Rules and Teacher	18	9.1	16	11.1	34	10.0
Withdrawal	17	8.6	16	11.1	33	9.7
Daydreaming and Sleeping	16	8.1	10	7.0	26	7.6
Out of Order	17	8.6	7	4.9	24	7.0
Impudence	13	6.6	11	7.6	24	7.1
Difficulty in Getting Along with the Group	9	4.6	12	8.3	21	6.2
Emotional Insecurity	6	3.1	13	9.0	19	5.5
Total	197	100.0	144	100.0	341	100.0

*No.=Number of responses

†%=Percentage of response

On the whole, the investigators said, the results obtained were similar to those reported by Wickman—"five of the problems of the first ten of this study were included in the first ten listed by one of Wickman's large groups of teachers." Many of the problems which were listed focused emphasis upon symptoms of behavior rather than upon initial cause. For example, problems considered important were "gum chewing, failure to bring sufficient supplies to class, humming, note-passing, whispering, dropping ink bottles, candy eating, and twisting hair."

Linsky's 1957 study,²⁶ involving over 600 elementary school teach-

²⁶ Linsky, Arthur, *The Teacher's Guidance Role in the Elementary Classroom*. Unpublished Doctoral Dissertation, Chapel Hill, N.C., 1957.

ers in North Carolina city and country schools, indicated that the teachers today in the area studied have an increased awareness of the seriousness of troubled behavior on the part of children in their classes—"unhappiness, depression, unsociableness, and withdrawal"—as compared with teachers of 30 years ago. Yet they, too, as with teachers in the earlier studies, "are more apt to rate moral and disciplinary problems (destroying school property, impertinence, defiance, heterosexual activity, and disobedience) as more serious than personality problems—shyness, fearfulness, sensitiveness, and suspiciousness." Linsky says:

In reacting more negatively to troublesome, aggressive behavior than to the troubled, recessive child, teachers seem to be much more aware of behavior which upsets the present classroom situation than they are of behavior which indicates the probability of a future upset in the adjustment and happiness of the child. In talking with teachers it became evident that parents and the community expect teachers to promote the superior academic achievement of their children and perfect order in the classroom rather than to promote personal adjustment in each child.

There is some fairly clear evidence, however, that teachers generally have become more understanding than formerly with respect to the seriousness of behavior problems. Ullman's 1952 study, made in connection with the Prince George County (Maryland) Mental Health Clinic—a demonstration activity of the U. S. Public Health Service—indicates that "mental hygienists and teachers have moved closer together in their judgments of the serious behavior problems of children than they were at the time of the Wickman 1928 report." Items on which there are still significant differences, the report says, tended to be those on which the teachers felt less confidence in their own judgment—especially items referring to home or social relationships, preference for associating with different age groups, hostility or passive resistance, and intrapsychic or "worry" items:

Teachers rated most comfortably those items which came closest to their day-to-day experience with children, namely, work habits. Teachers also felt quite plainly that politeness and obedience were characteristic of good adjustment, while clinicians felt that the significance of these items for adjustment was equivocal.²⁷

²⁷ Ullman, Charles A., *Identification of Maladjusted School Children*, Public Health Service Publication No. 211 (Washington, D.C.: U.S. Government Printing Office, 1952).

The Teacher's Own Mental Health

What about the teacher's own mental health? Are teachers more maladjusted than others in the population? Some of the earliest studies seemed to indicate a rather high incidence of teacher maladjustment, and also some special difficulties that grew out of the teacher's place in society. Significant changes have occurred in recent years, however—in amount of professional preparation, in salaries (though still tending to be low in comparison with other professions), in types of behavior. Brookover asserts that society still tends to have a traditional attitude toward teachers that is slow to change. "The public tends to resent any attempt by the teachers to modify this traditional role of accepting whatever is provided for them," he says.²⁸ Moreover, teachers are expected to live by a special code of behavior. For a considerable period, marriage, "or even the possibility of marriage," as Brookover points out, was the basis upon which a prospective teacher was denied a position. Indeed, it was for many years the practice to dismiss a woman teacher when she married. This situation, however, had almost completely changed by 1950.

Nevertheless teachers are still more or less expected to behave "in accordance with standards established for them alone." To quote Brookover:

The community assumes a greater responsibility for the supervision of the activities of the teacher than for those of the policeman or fireman. The commonly expressed rationalization of this special code is that teachers must set a moral example for the children. The validity of such a demand is weakened for the children when they discover that their parents do not follow the special behavior code imposed on the teachers. . . . The fact that the teachers are expected to, and do, behave differently from the parents leads the child to the conclusion that the teachers are odd and non-human.

What kinds of fears and tensions do teachers have, or tend to have, and what can be done about them? In a study reported in 1952, Maurice R. Ahrens found that "teachers have many fears"—some that are short-lived and pass quickly; some that vary from place to place; and still others that seem to be perennial and "rather common to all

²⁸ Brookover, Wilbur B., *A Sociology of Education* (New York: American Book Co., 1955). See especially pp. 232-79, "Teacher Roles in School and Community."

or almost all teachers.”²⁹ Fears that seemed to be most constant and persistent were:

Fear of being unable to do an acceptable job of teaching
 Fear of criticisms from parents and other lay people in the community
 Fear of experimentation
 Fear of not being liked by children
 Fear of comparison with, and lack of acceptance by, other teachers
 Fear of administrative authority
 Fear of losing their jobs

Since teachers cannot function effectively with children in an atmosphere of fear, Dr. Ahrens points out, “it is imperative that we get at the source of tensions and find ways of eliminating or reducing them.” He lists some of the steps that have been taken in some communities. The first of these is that “teachers have an opportunity to participate in policy-making and in curriculum planning.” When this is done, “both the administrator and the teacher assume new roles”—the administrator becomes a master in group dynamics rather than a decision maker; he helps teachers to identify problems and to proceed through democratic processes to solve these problems. The teacher becomes a person whose ideas and industry are respected and not one who merely fits into a “status” hierarchy and carries out a certain amount of required work.

Unless a teacher understands and practices good mental hygiene, say Crow and Crow in their work on human development and learning, “he may become the victim of various emotion-disturbing experiences.”³⁰ It is extremely important, they assert, that a teacher possess emotional stability and achieve adequate adjustment to the mental-health hazards inherent in teaching. They list certain personal qualities that are desirable for an individual who teaches:

Good health, intelligence, good speech, flexibility, integrity, emotional stability, cheerfulness, courtesy, ability to get along with people, ability to do creative thinking, kindness, cooperativeness, sense of humor, patience, sincerity, and enthusiasm.

The list could, of course, be extended to include many other personal qualities, but Crow and Crow stress the importance of good teacher-

²⁹ Ahrens, Maurice, “Helping Teachers with Their Tensions,” *Childhood Education*, 28 (January, 1952), pp. 211-15.

³⁰ Crow, Lester D., and Alice Crow, *Human Development and Learning* (New York: American Book Company, 1956).

pupil relationships, the teacher's knowledge of the nature and needs of learners, and understanding of the ways in which teacher-pupil relationships can be improved—smaller classes, improved teaching procedures, more homogeneous grouping of pupils, greater teacher insight into young people's abilities, interests, and attitudes; more effective counselling services. They pay particular attention to teacher-coworker relationships and to aspects of teacher maladjustments. "Many teachers possess personality qualities that are serious handicaps in their work. They may be too sensitive to warranted criticism, or they may become sarcastic and unfriendly in their school relations."

Some studies that have been made recently are not too reassuring as to the mental health of either teachers or school children. Kaplan and O'Shea³¹ found in their study of "mental health hazards of classroom teachers" in Oregon that "teachers are laboring under a great deal of emotional pressure." They present the following table:

TABLE 3. Mental health hazards of classroom teachers.

<i>Factor *</i>	<i>Frequency Percentage</i>	
Teacher load too heavy.....	43	64
Overcrowded classrooms	36	51
Inadequate housing	35	50
University work carried concurrently with full teaching load	33	49
Failure of report card to give adequate description of a specific child's potentialities.....	32	48
Lack of parental cooperation with the school.....	30	44
Teachers performing secretarial duties.....	28	42
Insufficient supplies and equipment.....	27	40
Conflicting personalities of teachers.....	27	40
Failure of schools to realize and satisfy individual differences, intelligence, and achievement	26	39
Lack of school funds to operate efficiently	25	37

Mental health hazards of children

<i>Factor †</i>	<i>Frequency Percentage</i>	
Unsatisfactory home conditions.....	51	91
Failure of traditional curriculum to meet the needs of many students	42	62
Overcrowded classrooms	36	51
Fear to participate orally in class due to insecure feelings...	36	51

³¹ Kaplan, Louis, and J. David O'Shea, "Mental Health Hazards in the School," *Educational Leadership*, 10 (March, 1953), pp. 351-54.

Failure of schools to realize and satisfy individual differences and achievement	34	50
Inadequate playground facilities	32	48
Failure to be accepted into desired clique.....	30	46
Parents unhappily married	30	44
Inability to participate in all desired school activities due to financial difficulties	30	44
Failure of a report card to give adequate description of a specific child's potentialities	30	44
Inadequate clothing and spending money.....	29	43
Lack of parents' cooperation with the school.....	28	42
Labeling students as delinquent or for lower status.....	26	39
Teacher using degrading remarks, sarcasm, harsh criticisms to student before other students	26	39
Speech impediment interferes with classroom participation..	26	39
Conflicting personalities of pupils.....	26	39
Shyness (extreme)	25	37

* These were the 11 items that troubled 25 or more of the 67 teachers.

† Highest frequency items checked as mental health hazards with reference to the pupil by 67 teachers who were graduate students in Oregon.

The School Curriculum

The mental hygiene approach to education—and specifically to curriculum—is described by W. Ray Rucker as a “way of transforming everyday schooling into a process which can effectively develop individuals mature enough to live intelligently, successfully, and happily in the complex social and cultural matrix of the modern world.”³² Dr. Rucker and other educational workers of the present day have been calling attention to the fact that comparatively few curriculum studies and projects have focused on the mental health point of view as derived from new knowledge in the behavioral sciences—“sciences which have directed the attention of teachers and administrators to the contributions which child development, cultural anthropology, group dynamics, sociometry, principles of learning, and the like can make to the total maturing of the personality.” Dr. Rucker asserts that the curriculum, defined as “the total of all the activities which children experience under the guidance of the school,” furnishes the real test as to whether or not the concepts derived from the behavioral sciences are translated into wide practice.

That the curriculum itself has opportunities for contributing to

³² Rucker, W. Ray, *A Curriculum Focuses on Mental Health* (Austin, Texas: Hogg Foundation for Mental Hygiene, 1954).

mental health that are frequently overlooked is the judgment of Moore and Sutherland.³³ Some areas of study, these authorities point out, are specifically designed for personal development—the humanities, the arts and crafts, home and family life, health and physical education, and so on. But integration of areas of study is essential:

When students used to go from mathematics to English, from biology to music, from history to homemaking, with little or no integration of these areas of study—and sometimes with a belittling of one subject by the teacher of another—learning was treated as segmental, with each segment occupying a special compartment in experience. Many times these segments never got together into a related whole in the minds of the learners.

For the curriculum to make its potentially great contribution to mental health, its subject matter now is treated as integrated and is shared by teachers and students alike. Moreover, extracurricular activities are now considered a part of the developmental process.

Useful as a guide to determining how well schools are meeting mental health needs in a modern program is a four-page inquiry form prepared by the National Council of Independent Schools.³⁴ The Council committee in charge of the project has been careful to explain that this leaflet is not a standardized test or survey instrument, but rather a series of “loaded” questions, each with the aim of discovering to the user the “mental hygiene” point of view and the existence in use of that point of view in his school.

Instead of beginning with items about the traditional school “subjects,” this inquiry asks: “What kind of respect is accorded the learning that comes by way of activities? For instance—fine arts, music, industrial arts, rhythms and dancing, dramatics, physical education. Are they fully respected? Are they reserved for those with special talent? Is there any taint of exploitation of the young people involved?” The inquiry further goes into the importance of such activities as student councils and committees, discussion groups, student religious activities, community work or “work time,” and clubs. What about opportunities to express one’s self creatively—whether in the arts or other areas—is this understood and used to advantage? And as

³³ Moore, Bernice, and Robert L. Sutherland, “Curriculum,” *Educational Leadership*, Vol. XII, No. 2 (November, 1954).

³⁴ *Some Inquiries Helpful in Appraising Mental Health in a School* (Boston: National Council of Independent Schools, 1952).

to the mastery of the tools of learning, are they so treated that these tools become elements of security in the child's life?

There are questions about guidance: Are there advisers available who can really be helpful? Is the testing system used as one kind of evidence rather than as a categorizer of children, a measure of teaching, or an end in itself? Is there true regard for all kinds of gifts and degrees of success? Is the marking and report system a teacher's or parent's weapon, or is it a medium of learning and teaching and guidance? And the school atmosphere: Do the children have a sense of belonging, each to something in which he is a responsible participant?

Classroom Behavior

"We need to think of teaching as an adventure in human relations," Viola Theman says, "and to begin to evaluate a school day from this point of view and translate what we do into classroom behavior." She illustrates with an example of "the simple things many of us do regularly and somewhat thoughtlessly, or do and excuse ourselves for doing, because of rules (which we could alter), because of class size, or because our pupils are children." This is her account:

1. "It's twelve of nine so it's too early to come indoors. You know you should wait outdoors. The bell will ring in just a few minutes. Yes, I know it's cold, but that's the rule." Then, ten minutes later to another child: "It's after nine! Just why are you late? Yes, only two minutes after nine, but that's two minutes late!"

Translate this to your own school. Is the time interval as narrowly conceived as in this anecdote? Would you as hostess or club leader impose such rigid time limits, so rudely, for the first, second, or even third offense of any adult? What may we have taught children by this miserable adventure in human relationships—(1) to stay home if tardiness is probable, (2) to skip breakfast or run all the way to school, crossing streets too hurriedly, (3) to play hooky to avoid being reprimanded at home and at school, (4) to think of teachers as censors in contrast with the helpers we're teaching children to believe policemen are? Not all tardiness is the fault of the child or even of his family. Sometimes even we may cause a child to be tardy in arriving home or in keeping other afternoon appointments. Could it be that the interval of time between school bells is too short

for children, especially for young children who are (1) without watches, (2) unable to tell or judge time accurately, and (3) unable to control all early morning events at home? We give adults with all these skills leeway for arrival at our homes for dinner. We deliberately plan to serve later than the exact time set by the invitation! Besides, if guests arrive somewhat early we never say, "Please wait outside or in the hallway," nor do we chide them for arriving late. We accept and do not demand explanations of adults.

II. Now it's nine A.M. and the thirty plus pupils enter the classroom. The teacher says, "Good morning, boys and girls."

The teacher would never say "Good evening, guests" to a group of adults. Even guests arriving in groups would be greeted individually, by name, and made to feel welcome by a personally directed comment. Why can't more schools begin with a leeway of 15 to 30 minutes prior to the official tardy bell so children can be greeted as individuals and exchange friendly words and ideas with the teacher? This would give the teacher a chance to observe individual pupils and pupils as individuals, before the entire class is there demanding attention.

III. Today many classes have so many pupils that the entire day—sometimes even a week—passes and some children (usually the quiet, agreeable ones) have not exchanged a single personal comment with the teacher.

No guest or employee in one's home would be so treated and continue to return, for they would feel unwanted. One teacher of more than 60 kindergarten children during a morning session was able to direct a personal comment to each pupil. It was apparent to the observer that she knew and respected each child. And each pupil knew that the teacher was interested in him individually. She expressed her effort in these terms: "Seems that the least I can do is to speak to each child at least once." She accords each child as much respect as she does the adults who visit her classroom.

IV. A beginning teacher, describing her third-grade class of poor, misbehaving, slow-learning children for whom she felt a marked measure of pity and concern said she wanted to give a Valentine party for them. She asked in all seriousness if it would be a good idea to give ice cream to each of them but to serve cookies only to the ones she felt qualified as "good"

since she had become their teacher. She thought it would encourage the others to be good. "Good, for a cooky?" one was tempted to say. And then the thought came to her of how embarrassed she would be if a child to whom she had doled out a cooky saw a friend without a cooky and thoughtfully offered to share his!

In what other area of social living would we even consider any variation of the cooky plan? Why do we even for a minute think this is an acceptable way of teaching because the persons are children, when we know so well we would not consider such a plan with adults, not even with the mothers of these children!

V. "Believe me, I'm having plenty of conferences with these parents and I'll keep on until this class settles down so we can get to work," said another teacher. In reply, "Have you tried reporting something good or pleasant to these parents? There is something good about each child, isn't there?" "Oh, yes!" she answered. "Do you think it would work?"

In these incidents, and in more classroom situations where we ponder our behavior as teachers, the simple question "*Would I do this to an adult friend?*" helps us to gain perspective. It helps us to avoid many of the taken-for-granted, thoughtless ways in which we fail to respect children as persons and thereby teach them to be inconsiderate, callous, resentful, or even mean to others.³⁵

Traditional School Procedures

Certain traditional school procedures have been looked upon by mental hygienists for a number of years as serious handicaps to mental health. As far back as the Commonwealth Fund report of 1938, and even before that, certain conventional school practices—such as "home work," "marks and examinations," "recitations," "grades," and "promotions" were scrutinized for the menace they tend to be to good mental health. Recently there have been significant changes with respect to many of these traditional procedures. There is more and more acceptance, for example, of a less rigid "grades" and "promotion" policy. Orle L. Derby sums up current theory as follows:

1. In general, children should be "promoted" unless there is some drastic reason why they should not be. In other words, the vast majority should go along from year to year, on the so-called "automatic" basis.

³⁵ Theman, V., "Good Days at School," *Childhood Education*, 32 (May, 1956), pp. 419-23.

2. Where there are grave doubts about a child's ability to profit from the work in the next highest grade, a thorough assessment of his total growth should be made. Pertinent questions should be answered, such as the following: Is he as socially mature as the group he will be with in the new grade? Will he profit more from going on than staying back? Is his emotional development such that he will not be injured by the higher standard demanded in the next grade? Is he mentally capable of doing the work? ³⁶

Studies of retardation and promotion, Dr. Derby points out, have shown that a child seldom benefits, in his total development, by being failed or held back a year. "The one legitimate reason why a child should not go on is probably that he is immature socially, emotionally, and mentally," says Dr. Derby. "Some children may need a longer time to grow to a certain stage of development than others."

The 1955 Yearbook of the American Association of School Administrators emphasizes such concepts of mental health (without necessarily referring to them as such) as "the need for belonging," "the need for security," and "regard for the individual." Grouping children in school by other than the traditional grade system has been hailed by some authorities as an administrative contribution to mental health. In a report on such plans Robert Anderson says that current opinion seems to be that "the ungraded primary class," as it is called, not only helps children's mental health—since "non-promotion is devastating to the personality of children"—but even decreases, for a considerable number of children, the time necessary for going through what are traditionally thought of as the first three grades.³⁷

The problem of "promotion" involves countless anxieties on the part of children, parents, and teachers—whether we use "mid-year entrance periods," mid-year promotions, double promotion for the "bright" children, heavy doses of failure, or whatever device we hit upon. The marking system is especially obnoxious—whether we use percentages, letter grades, or just "pass" and "fail." More and more school systems are finding it advantageous (as long as the anachronism of "promotion" exists) to use the automatic plan whereby most children pass on from grade to grade. A few communities have had

³⁶ Derby, Orle L., "Toward a Rational View of Promotion," *Understanding the Child*, 23 (April, 1954), 43-45.

³⁷ Anderson, Robert H., "Ungraded Primary Classes—An Administrative Contribution to Mental Health," *Understanding the Child*, 24 (June, 1955), pp. 66-72.

the courage and foresight to abolish, at least for the early childhood years, the outworn scheme of first grade, second grade, and so forth—a scheme that apparently arose in comparatively recent times and was opposed by leading educators of the period. It has become more and more apparent that the grade system, based as it was on a narrow concept of schooling, is insufficient for modern conditions; that something more significant is required when the school's function is looked upon as having to do with the all-round development of children and youth in a modern society.

"Home work" is another school tradition about which serious mental health questions have been raised. "Excessive tension and a sense of pressure are often associated with home work," says Ruth Strang.³⁸ If a pupil is not able to resist the appeal of television or student activities, he may begin to think of himself as lacking in purpose and will power. Late hours spent in study, and failure to complete assignments may make a conscientious pupil depressed and anxious. She adds:

For mental health, children and young people need to engage in worthwhile out-of-school tasks suited to their individual capacities. Homework should supply such tasks and reasonable freedom in carrying them out. Whenever homework crowds out social experience, outdoor recreation, and creative activities, it is not meeting the basic needs of children and adolescents.

Emotional effects of tests and examinations have long been noted—and frequently assailed—but not much research has been done in this area. What has been done is not reassuring. In a study reported by Arthur DeLong of Michigan State University, the anecdotal accounts of observed children "indicated unmistakably that many, if not all, of the children were emotionally disturbed during the test-taking period."³⁹ Children were observed biting nails, chewing pencils, talking to themselves, crying, acting hostile to others. Emotional disturbance was likewise manifested by such factors as excitement, eagerness to get started, intensive application to work, noisiness before and after tests, concern about correctness of answers, and keen curiosity about progress of classmates. There is nothing new about

³⁸ Strang, Ruth, *Guided Study and Homework, What Research Says to the Teacher*, No. 8 (Washington, D.C.: National Education Association, 1955).

³⁹ "Emotional Effects of Elementary School Testing," *Understanding the Child*, 24 (October, 1955), pp. 103-107.

emotionalism in relation to tests and examinations, of course, but more attention may need to be given to the further effects on personality. In the Michigan study, for example, a boy whose first-grade record showed him to be "a happy, self-reliant, cheerful and well-adjusted child in all situations, with no emotional blocks," was the boy who, when the tests were given two and a half years later, cried during the test and went home with a stomach ache.

Certain examining and testing procedures have been subject to scrutiny in recent years. "The main purpose of testing is not to grade or rank pupils," Rothney reports in a 1955 research bulletin.⁴⁰ "It is to assist classroom teachers in getting evidence of achievement and growth." And he points out that specialists in measurement have largely failed in constructing standardized tests to measure the totality of behavior. "The traditional mathematics and logic which they use are handmaidens in the science of a piecemeal mechanical view of the world. They have not yet produced the total understanding of the human personality which the classroom teacher must have." And he adds:

The period when such procedures were uppermost and in which quotients of intelligence and achievement were computed for most children seems now to be drawing to a close. It has served its purpose in making classroom teachers more aware than previously of individual differences among pupils. . . . The days of mass testing seem to be numbered along with those of the "complete battery of tests" imposed on pupils and teachers. Classroom teachers are learning how and when to fit well-chosen tests into a carefully planned and flexible program of determining the progress of particular pupils.⁴¹

How Can We Tell?

For those working in the field of education, one way to find out whether what is done tends toward better mental health is to try to answer such questions as the following:

1. What is the concept of education that prevails? Is it that of narrow schooling, or all-round development? Are we really concerning ourselves with individual human beings and their needs?
2. Does "health" (both mental and physical) actually come first?

⁴⁰ Rothney, J. W. M., *Evaluating and Reporting Pupil Progress* (Washington, D.C.: National Education Association, 1955).

⁴¹ *Ibid.*

Do we think of health, work experiences, music and the fine arts, learning to live with other people, as fundamentals in education, or just "extras"?

3. What kind of "emotional climate" do we have—in the classroom, in the administrative office, in the shops, on the playground, everywhere in the enterprise? Are teachers and other school workers friendly, understanding, and human?

4. What is the attitude toward "individual differences"? Are we concerned chiefly with "I.Q.'s" and "subjects," or do we think of individual possibilities in all areas—emotional, esthetic, and social?

5. Do we understand and act on the principle that behavior is caused? Do we tend to explore into the conditions that explain what an individual is doing, and help him on the basis of that to make a better adjustment?

6. Has the community learned to provide a child guidance clinic, school social workers, and similar service to help youngsters with special problems, and to assist educational workers in understanding the needs of individual human beings?

7. Is the educational situation "authoritarian," or is it genuinely democratic, with children, teachers, parents, and others sharing in planning and carrying out the program?

8. Do the community and the educational administration understand that "administration" is not something that exists for itself, but is justified only as an agency to facilitate the essentially human task involved in education?

9. Is our underlying philosophy such that we have faith in the possibilities of human beings—building on what they can do rather than on what they cannot do?

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Make a list of the experiences in your own life that seem to you to have (a) helped, or (b) hindered, your mental health.
- 2 • Of the people you know best, how many are examples of "good mental health"?
- 3 • Visit one of the following types of institutions and try to find out what its function in a mental health program is: (a) a hospital for mental diseases; (b) a juvenile reformatory or "reform school"; (c) a nursery school.

- 4 • Examine critically the definitions of mental health given by various authorities in this chapter. Which of these seems most helpful? With what aspects of mental health would the schools particularly be concerned?
- 5 • What reasons are there, if any, why teachers and other school workers should be any more concerned with mental and emotional health than other workers in society?
- 6 • With reference to the studies of classroom behavior by Wickman and later investigators, does your own experience indicate that teachers are now more concerned about types of behavior recognized by mental hygienists as serious than they were formerly?
- 7 • What about the teacher's own mental health? Read carefully the comments of Brookover and Ahrens in this chapter. How does your own experience check with the findings of Ahrens regarding "fears"—especially those that "seemed to be most constant and persistent."
- 8 • Read carefully Viola Theman's description of classroom situations. Do you consider that "mental health" is involved in what she describes?
- 9 • Analyze the types of "traditional school procedures" described in this chapter. To what extent would you agree with those authorities who assert that such conventional school practices as "home work, marks and examinations, recitations, grades and promotion" are a menace to good mental health?
- 10 • Find out what organizations in your state and community—mental health associations, parent-teacher organizations, child study groups, public health agencies—are concerned with mental health and can furnish materials for use in the schools.

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- Association for Supervision and Curriculum Development, *Fostering Mental Health in Our Schools*. Washington, D.C.: National Education Association, 1950.
- Bernard, H. W., *Mental Hygiene for Classroom Teachers*. New York: McGraw-Hill Book Co., 1952.
- Brookover, W. B., *A Sociology of Education*. New York: American Book Company, 1955.
- Buell, B., and associates, *Community Planning for Human Services*. New York: Columbia University Press, 1952.
- Bullis, H. E., *Human Relations in the Classroom*. Wilmington, Del.: Delaware State Society for Mental Hygiene, 1951.

- Chamberlain, H. E., and E. de Schweinetz, "Nine Programs for the Promotion of Mental Health," in *Community Programs for Mental Health*. Cambridge, Mass.: Harvard University Press, 1955, pp. 46-157.
- Coleman, J. V., "Workers in the Field of Mental Health," *Annals of the American Academy of Political and Social Science* (March, 1953), pp. 81-91.
- Cronbach, L. J., *Educational Psychology*. New York: Harcourt, Brace and Co., 1954.
- Felix, R. H., "A Bookshelf on Mental Health," *American Journal of Public Health*, 46 (April, 1956), pp. 397-407.
- Fourth International Congress on Mental Health, Proceedings*. New York: Columbia University Press, 1952.
- Frandsen, Arden N., "Mental Health and Learning," in *How Children Learn*. New York: McGraw-Hill Book Co., 1957, pp. 241-85.
- Ginsburg, S. W., "The Mental Health Movement and its Theoretical Assumptions," in *Community Programs for Mental Health*. Cambridge, Mass.: Harvard University Press, 1955.
- Group for the Advancement of Psychiatry, *Considerations on Personality Development in College Students*, Report No. 32. Topcka, Kansas, Committee on the College Student, 1955.
- *Promotion of Mental Health in the Primary and Secondary Schools: An Evaluation of Four Projects*, Report No. 18 (January, 1951).
- Hollister, W. G., *Better Mental Health for Our People: An Introductory Manual for Mental Health Workers*. Atlanta, Georgia: Cullom and Chertner, 1956.
- Jahoda, M., *Toward a Social Psychology of Mental Health*. New York: Josiah Macy, Jr., Foundation, 1950.
- Jenks, Wm. F. (ed.), *Mental Health and Special Education* (Washington, D.C.: The Catholic University of America Press, 1957.
- Katz, B., and G. F. J. Lehner, "Mental Health and the Classroom Teacher," and "Application of Mental Hygiene to the Classroom," in *Mental Hygiene in Modern Living*. New York: The Ronald Press, 1953.
- Kotinsky, R., and H. L. Witmer (eds.), *Community Programs for Mental Health*. Cambridge, Mass.: Harvard University Press, 1955.
- Laycock, S. R., *Teaching and Learning*. Toronto: Copp Clark Company, 1954.
- Lemkau, P. V., *Mental Hygiene in Public Health*. New York: McGraw-Hill Book Co., 1955.
- Lindgren, H. C., *Mental Health in Education*. New York: Henry Holt, 1954.
- Lloyd-Jones, E., R. Barry, and B. Wolf (eds.), *Case Studies in Human Relationships in Secondary School*. New York: Teachers College, Columbia University, 1956.
- Mead, Margaret (ed.), *Cultural Patterns and Technical Change: A Manual Prepared by the World Federation for Mental Health*. Paris: UNESCO, 1953.
- Menninger, W. C., "Self-understanding for Teachers," *NEA Journal*, 42, September 1953, pp. 331-33:

- Mental Health in Modern Education*, National Society for the Study of Education, 54th Yearbook, Part II. Chicago, The Society, 1955.
- Mental Health Programs of the Forty-Eight States: A Report to the Governors' Conference*. Chicago: Council of State Governments, 1950.
- Mental Hygiene in the Nursery School*. Paris: UNESCO, 1953.
- National Council of Independent Schools, *Some Inquiries Helpful in Appraising Mental Health in a School*. Boston: National Council of Independent Schools, 1952.
- Rankin, P. T., and J. M. Dorsey, "The Detroit School Mental Health Project: A Five-Year Report," *Mental Hygiene*, 37 (April, 1953), pp. 228-48.
- Redl, F., and W. W. Wattenberg, *Mental Hygiene in Teaching*. New York: Harcourt, Brace and Co., 1951.
- Removing Blocks to Mental Health in School*. Albany, N. Y.: State Education Department, 1954.
- Rothney, J. W. M., *Evaluating and Reporting Pupil Progress*, What Research Says to the Teacher, No. 7. Washington, D.C.: National Education Association, 1955.
- Rucker, W. R., *A Curriculum Focuses on Mental Health*. Austin, Texas: Hogg Foundation, 1953.
- Ryan, W. Carson, *Mental Health Through Education*. New York: Commonwealth Fund, 1938.
- "Mental Hygiene in Education," *American Journal of Psychiatry*, annual reviews. January 1951-January 1958.
- Soddy, K. (ed.), *Mental Health and Infant Development*. New York: Basic Books, 1956.
- Sutherland, R., *Twelve Years of Mental Health Work in Texas*. Austin, Texas: Hogg Foundation for Mental Hygiene, 1953.
- U. S. Department of Health, Education, and Welfare, *Evaluation in Mental Health: A Review of the Problem of Evaluating Mental Health Activities*. Public Health Service Publication, No. 413. Washington, D.C.: U.S. Government Printing Office, 1955.
- *State Mental Health Programs*. Washington, D.C.: U.S. Government Printing Office, 1954.
- *The Teacher and Mental Health*. Washington, D.C.: U.S. Government Printing Office, 1955.
- Vaughan, W. F., *Personal and Social Adjustments: Foundations of Mental Health*. New York: Odyssey Press, 1952.
- Wall, W. D. (ed.), *Education and Mental Health: A Report Based upon the Work of a European Conference Called by UNESCO*. Paris, UNESCO, 1955.

PERIODICALS

- Childhood Education*, Association for Childhood Education International, 1200 Fifteenth Street, N.W., Washington 5, D.C.

Children, Children's Bureau, U.S. Department of Health, Education and Welfare, Washington 6, D.C.

Child Study, Child Study Association of America, 132 E. 74th Street, New York 21, N.Y.

Educational Leadership, Association for Supervision and Curriculum Development, 1201 Sixteenth Street, N.W., Washington 6, D.C.

Mental Hygiene, National Association for Mental Health, 10 Columbus Circle, New York 19, N.Y.

Understanding the Child, National Association for Mental Health, 10 Columbus Circle, New York 19, N. Y. (Discontinued.)

PART

V

**EVALUATION AND
GUIDANCE**

17

APPRAISING THE RESULTS OF LEARNING

Measurement and evaluation in education are primarily concerned with the gathering of evidence of pupil growth that will make it possible to evaluate the outcomes of instruction and learning. The measurement of pupil growth in concepts, skills, attitudes, academic aptitude, and the like may be done by formal as well as by informal tests and techniques. The teacher who gives a mark or grade to the pupil making an oral recitation is using an informal method of measurement. The teacher who marks or grades a written report or essay is also using an informal method of measuring growth. Very frequently the objectivity of these informal methods of measuring pupil growth is influenced by factors other than actual accomplishment of the pupil in terms of an aim or objective of the curriculum.

Evaluation Determined by Aims and Objectives

Evaluation should be made in terms of the aims and objectives of education and of the subject or activity taught. In recent decades, aims and objectives of education for which measures were constructed have become more comprehensive. One of the newer ideas in evaluation is that the scope of any plan for appraisal of pupil growth should include the major objectives of the curriculum or of the subject. Such aims or objectives comprise not only growth in acquisition of information and skills but also the gathering of evidence about attitudes, interests, ways of thinking, work and study skills, and personal social adaptability. These newer and more comprehensive objectives require the use of appropriate techniques such as tests, rating scales, questionnaires, interviews, diaries, and anecdotal records.

OLD AND NEW IN EVALUATION

Several decades ago testing and evaluation procedures that were available were of a relatively simple sort. At that time the new type of objective test had just been introduced. The teacher's major instruments of measurement were the essay examination and the oral quiz. The major objective of the curriculum tended, also, to be limited to the simple skills of oral and silent reading, writing, arithmetic, spelling, and the acquisition and reproduction upon demand of certain skills or certain items of information in history, geography, and the other subjects that comprised the curriculum. Many teachers felt that a test of subject matter mastery was sufficient for evaluating pupil growth.

In recent years, however, a change has occurred, and both elementary and secondary school curricula now include an emphasis upon more comprehensive objectives of teaching. The concern for the mastery of information has been supplemented by such newer objectives as pupil growth in attitudes, interests, powers of critical thinking, work and study skills, and personal social adaptability. Along with this emphasis upon newer objectives has come an increased emphasis upon newer and more objective methods of gathering evidence of pupil growth in these newer objectives.

The Use of Tests

It is important to determine, first, the reasons for administering tests. The proper use of tests requires that one or more important and desirable purposes shall be served. Intelligent planning is basic to the wise use of test results. One way of classifying the use of tests may be according to the functions of various school officers or personnel, namely, the administrator, the supervisor, and the teacher. Many of the purposes may be satisfied by the data from a single test.

USES BY ADMINISTRATORS

The administrator, for instance, may use the test results to provide records of pupil achievement and progress. These may be entered upon the pupil's cumulative record card and may become a basis of the permanent record of the evaluation of the growth and progress of the individual or of the class group. Another use by the administrator is to provide reports to parents. Frequently the principal may

find it necessary and desirable to supplement his opinions or the teacher's opinions about a pupil by objective evidence gathered by means of a formal or standardized test. Such evidence may frequently be used in reports to, or in conferences with, parents. A third use is to make available more systematic and objective records when a pupil is transferred to other schools. Such records permit a better interpretation of a pupil's status and facilitate placement in a congenial classroom in the new school. The administrator may also use test results to provide data for periodic reports of school progress to the patrons in a community. Frequently, also, the data from various tests may be consulted in the classification of pupils for instructional purposes.

USES BY SUPERVISORS

The supervisor, likewise, may use the test results for a variety of purposes. His major task is to help the teacher to do a better teaching job. This responsibility can best be realized if both the teacher and the supervisor have evidence about the status of the pupil as well as about his needs and interests. One of the uses that a supervisor may have for tests is to determine the status of a class or a pupil in some of the major objectives of the curriculum. This will permit him to indicate desirable changes in instructional procedures or in learning procedures for various children. Another purpose may be to evaluate teaching methods or instructional materials. Again this may be accomplished by obtaining evidence of the relative contribution that a particular teaching method or particular instructional materials make to the pupils' progress.

USES BY TEACHERS

The teacher uses the test results for a variety of purposes, many of which are similar to those of the administrator and supervisor. The teacher may discuss the test results with the supervisor in order to arrive at an agreement on various instructional or learning problems. The teacher may use the results of tests and measures (1) to determine the status of each pupil in various subjects and in various objectives of the curriculum; (2) to evaluate the status and rate of growth of each pupil in terms of his ability and age; (3) to identify the educational needs of each pupil; (4) to identify the gifted pupil, the normal pupil, and the slow-learning pupil; (5) to group pupils for instructional purposes within the class group; (6) to analyze or

diagnose an individual pupil's difficulties and rate of growth; (7) to determine the achievement status of the class at the beginning and at the end of the term. These uses of test results can all increase the effectiveness of the learning process and make it possible to provide for the fullest development of the individual pupil.

In summary, then, the major uses of test results may be listed as classification, educational guidance, diagnosis, and vocational guidance—all of which contribute directly or indirectly to the improvement of instruction. Tests have been used to classify pupils in a school into superior, average, and below-average groups so that adaptations of the curriculum might be made more easily, especially in group work.¹ The classification of pupils into these groups, however, should include consideration of special talents and disabilities, social interests, and chronological age if the plan is to be effective.

EDUCATIONAL GUIDANCE

Educational guidance has progressed beyond the concept of a survey of a pupil's abilities. It is now an integral part of the educational program. Skilled guidance has become a part of each teacher's responsibility to her pupils. Individual needs and abilities, rather than uniform grade standards, are the bases of teaching. The teacher uses all pertinent data to counsel or guide her pupil in his educational program. Thus, a pupil in the high school who has the comparatively low I.Q. of 80 would not be counseled or guided to attempt a college preparatory course.

DIAGNOSIS

Diagnosis is aided not only by the usual test, but by diagnostic tests that are constructed to provide a pattern or a detailed analysis of individual performance in various skills and abilities. The test items and scoring are arranged so that the specific strength and weaknesses of the individual may be discovered. Special tests have been constructed to diagnose skills and abilities involved in language usage, personality, mechanical ability, reading, arithmetic, critical thinking, and the like. When such a diagnosis is interpreted in relation to the mental capacity and other characteristics of an individual, remedial programs to facilitate the individual's growth may often be established.

¹ See Chapter 5.

VOCATIONAL GUIDANCE

Vocational guidance can use test results in conjunction with other information. Increasingly reliable advice may be offered to an individual about whether or not to undertake certain vocations. Data can be obtained in part through intelligence, achievement, and aptitude tests, if necessary, and the individual can be urged to consider various occupational choices adapted to the pattern of his abilities. A high school pupil, for example, with an I.Q. of 85 and poor achievement in mathematics and sciences would not be guided to the vocation of engineering or accounting. The attempts at vocational prediction are generally in broad categories such as clerical ability, mechanical ability, musical talent, and the like.

Mechanical aptitude tests in which the student assembles or disassembles doorbells and the like are sometimes used. Other mechanical aptitude tests employ pencil-and-paper techniques. On the other hand, aptitude for music is measured by tests in which exercises are played on a phonograph and the individual responds to discrimination for pitch, intensity, time, consonance, tonal memory, and rhythm. Art ability tests are generally based upon judgment of artistic qualities in pictures. Aptitudes are generally considered as broad patterns of traits inherited or acquired and it is impossible to predict specifically which of the approximately 25,000 occupations an individual should enter. Not only skills, but also interests, temperament, and personality, as well as satisfaction in a given occupation,² are important.

MISUSES OF RESULTS

It is wise, however, to point out that the test results may frequently be misused. If the design of the measurement program is narrow and limited, the testing program may tend to determine the emphasis upon specific objectives of the curriculum to the detriment of others and to the detriment of desirable trends in pupil growth. Frequently test results of a very partial nature are used to estimate or to rate the teacher's teaching ability. Although such evidence may be desirable as a part of the data to be considered in rating teachers, few educators would defend a rating made solely upon this basis. Many administrators, however, misuse test results by employing them for purposes such as this.

² See any recent text in evaluation, measurement, or guidance.

It should be pointed out also that reliable and valid instruments of measurement are, by their very nature, restricted to an appraisal of limited aspects of pupil behavior or growth. It is impossible to measure the whole result of an educative experience by any one test or battery of tests. The hope remains, however, that, by measuring many important and vital aspects of experiences, some vital appraisals may be obtained of the relative merits of diverse educational practices.

Characteristics of a Good Test

VALIDITY

Any test, regardless of the objectives which it is designed to measure or the item construction techniques applied, must be *valid*. This means that it must measure the objective or an aspect of the objective that the authors claim it is measuring. One method of determining the validity of an achievement test is to study the content of the test from the standpoint of agreement with the particular course of study for which it is designed to be used. If it is a test to measure the knowledge that pupils have developed in a biology course, its items should be a sample of the concepts and the information that have been taught in such a course. This curricular validity may be achieved by analyzing textbooks used in the course, the course of study itself, and the opinions of experts in the field.

The validity of some tests, particularly aptitude tests, rests upon the accuracy with which they predict future performance. A valid test of intelligence, or mental ability, should predict relative success in academic achievement. A valid test of musical aptitude should predict relative success in learning or performing in music.

Another aspect of validity is called "statistical validity." A test may be highly valid so far as choice of curricular items is concerned but, because of the form in which they may be stated, the test may have no *statistical validity*. For example, a biology test may include 100 facts or ideas found frequently in biology textbooks but may present them in exercises almost entirely too difficult for high school pupils to understand or so easy that almost all high school pupils can answer them correctly. The test elements, or items, therefore, should be scaled so that they represent a range from very easy to very hard for the students for whom the test is designed.

RELIABILITY

A test is *reliable* if it measures consistently. Upon a second or repeated application, the test should provide an index for ranking of pupils similar to that of the first application of the test. The reliability of a test is not determined by examining the test itself, but the test must actually be tried out to yield desirable information. This may be accomplished either by administering two comparable forms of a test or by a second application of the first test after a given period of time. The scores obtained by the pupils on the first and second tests or on the odd and even items of a test are correlated, and the coefficient of reliability so obtained permits one to judge how consistent or reliable the test is as a measuring device. Other more complicated methods of determining reliability are available, but because of their statistical nature, they will not be discussed here.

NORMS

Another characteristic of a good test is the fact that certain *norms* are provided for a wise interpretation of the test results. These norms may appear in various forms, such as *grade scores*, *age scores*, *percentile scores*, or *standard scores*. At the high school and college level, the percentile scores and standard scores are becoming more and more widely used, because they permit a good description of a student's status. If a student has obtained on a test a raw score that is translated to a percentile score, let us say, of 35, we can say that on this test the student ranks above 34 per cent of the pupils of his grade or his age, depending upon whether the score is for grade or for age.

PRACTICABILITY

The difficulty or ease of scoring a test and of administering it is also an important consideration. The test must prove itself practical, of easy administration, and of easy scoring if it is to be used widely. These characteristics of a test will naturally be kept in mind from the initiation to the conclusion of a test construction project.

VARIETIES OF TESTS

There are many forms and varieties of tests, which range from rather subjective to quite objective methods of measurement and from unreliable to reliable. These can perhaps be discussed under

various headings or aspects. Frequently teachers prefer to make their own tests, and it is possible to offer some suggestions that will help teachers to construct items for their own test. Perhaps one of the simplest objectives of the curriculum for which objective tests can be constructed is the acquisition of information and skills.

The kinds of tests vary according to the types of usage which may be employed. This classification of tests sometimes includes such nomenclature as speed or power tests, survey tests, diagnostic tests, prognostic tests, and achievement tests.

A speed test is one in which the individual's ability to react quickly to certain items is tested. The emphasis in this test is upon the rate of answering items, and a definite time limit for completing the test or a portion of the test is established by the author.

A power test, on the other hand, is one in which the factor of time or speed is not particularly emphasized. In such a test, the items are usually arranged in the order of difficulty, wherever that is possible, and sufficient time is given for almost all individuals in a grade for whom it is intended to attempt all items of the test.

A survey test is one in which the major purpose is to obtain a status, index, or score for a group of pupils rather than for individual pupils. On this account, the test scores for an individual pupil need not be particularly reliable, but the average score for a group of pupils may be highly reliable.

A diagnostic test is one designed for use with individual pupils, and it usually contains sufficient exercises of various types so that it is possible for the teacher or supervisor to determine those skills or aspects of an objective of the curriculum in which a pupil may need to have guidance in his growth or development.

A prognostic or aptitude test is one that is useful in predicting the probable growth or future performance of a pupil in a particular subject, activity, or other given line of endeavor.

Achievement tests may be described as those that attempt to measure the attainment of pupils in the various important objectives or areas of the curriculum.

TYPES OF ITEMS THAT ARE VALID FOR MEASURING VARIOUS OBJECTIVES

The types of items most frequently used in achievement tests may be designated as *true-false items*, *multiple-choice items*, *matching*

items, and *completion* items. Various types of items will be needed to measure validly the different objectives of the curriculum. These can be illustrated only in a very incomplete manner here. The matter of testing for information and concepts, for example, may be discussed first. In order to measure this objective, various types of items have been used. A popular type is the *multiple-choice*, of which the following is an example in a biology test:

Pasteurization of milk is produced by

- (a) boiling (b) evaporation (c) chemical agents (d) moderate heating (e) freezing

Information and concepts, for example, in biology, may be tested by providing a graphic illustration of a leaf and using an incomplete sentence in which the pupil provides the necessary information. The *completion* item is illustrated in a test where a diagram of a cross-section of a leaf is given with statements such as the following accompanying it:

1. The layer marked "a" in the diagram is the layer.
2. The part of the leaf marked "b" is called the

Another method of item construction used is the *matching technique*, which may be illustrated as follows:

In the left-hand column are listed the following concepts:

1. Pupa
2. Chrysalis
3. Larva
4. Adult
5. Egg

In the right-hand column are the following statements, which are to be matched with three of the concepts in the left-hand column:

1. First stage in complete metamorphosis ()
2. Second stage in complete metamorphosis ()
3. Final stage in development ()

The *true-false* item is widely used, especially in the tests made by teachers. Careful thought must be applied to the construction of such items so that they will not have ambiguous statements, or words (such as *always* and *never*) that tend to give away the answer. This type of item may be illustrated as follows:

Directions: In the following statements, indicate those which are true by underlining the word *True* and those which are false by underlining the word *False*.

- | | | |
|---|------|-------|
| 1. The mean, or average, is found by dividing the sum of scores by the number of cases. | True | False |
| 2. The third quartile is the highest score in the distribution. | True | False |

The types of items discussed are the ones most frequently used in tests of information and concepts. Such items may be carelessly constructed and fail to provide a valid or reliable score. Practice and study will improve their construction.

ESSAY EXAMINATIONS

The essay examination usually is made up of from five to ten questions in which the teacher requires an explanation or description. The student is asked to organize his ideas in paragraphs and sometimes in outline form. One criticism of essay questions is that they do not cover much of the material that may have been studied or discussed. Unless the questions are phrased clearly and unambiguously, the student may misinterpret them. The factors of lack of comprehensiveness, faulty interpretation, and individual judgment sometimes tend to discredit the essay examination. The most serious criticism, however, is that the marking of the essay examination is unreliable.

The ability to organize certain materials is often tested by means of essay questions. This type of question may be illustrated by the following:

Criticize: "Bacteria cause many diseases among men, therefore they should be destroyed."

C. W. Odell gives a scale for rating pupils' answers to this question, from which the following are taken:

Value 0—Bacteria cause many diseases. They cause pneumonia, scarlet fever, appendicitis, tonsilitis and many others. The statement is partially untrue, because it gives no attention to the case "for" the bacteria.

Value 10—Though some bacteria are responsible for many diseases among men, animals, and plants, others affect our lives in quite different ways. Economically they are very important. Together with the fungi they are the chief cause of decay, thus helping to keep the surface of the earth clean. Bacteria ripen milk and butter and are necessary in cheese making and various fermentations. Those bacteria that fix nitrogen are very valuable in agriculture.

Therefore, the sweeping statement above is not correct, since we should

wish to destroy only the harmful bacteria and not the many useful ones.³

Essay examinations can be improved and scored quite objectively if certain conditions are met. The first condition is that each question in an essay examination should be planned to measure one definite objective, such as an attitude or an interpretation of facts. A second condition is that the objective should be clearly understood and accepted by all readers of the examination. A third condition is that certain standards of rating, or values to be assigned, should be agreed upon by the readers. The restricted essay questions should be phrased, or stated, so that a clear definition of the intent of the question is available to the student and to the raters of the answer. The teacher or teachers scoring the answer to the essay question must decide first for what objective the question is to be marked. A model answer must then be formulated, assigning a certain number of points to each significant part of the answer. Several papers must next be rated independently by separate scorers to determine whether or not the rating scheme is workable. Better than only one model answer is an exhibit of several scaled answers assigned to various rating intervals on a ten-point scale. Contrary to popular belief, it is more difficult to construct a valid and reliable essay test than an objective test. Essay questions are by no means obsolete in instruction, but they usually need radical improvement to make them more than a mirror for a teacher's preconceived estimate of pupil achievement.

Achievement Tests for Evaluating Skills, Concepts, and Information

The most common type of appraisal in schools is to examine the relative amount of concepts and information that pupils may have acquired and remembered. Despite the frequent use and sometimes abuse of subject matter mastery tests, functional information is an objective with which teachers have been and will be concerned. Many information tests, both formal and informal, however, are so constructed that they encourage rote memorization of words rather than the development of real understanding of meanings and concepts. Tests which use verbatim the terminology of a textbook as the alternative answers to a question, for instance, encourage this undesirable

³ Odell, C. W., *The Use of Scales for Rating Pupils' Answers to Thought Questions*, Bureau of Educational Research Bulletin No. 46 (Urbana, Illinois: University of Illinois, 1929).



Some children enjoy taking tests. (Board of Education City of New York.)

type of rote memorization. It is desirable to get and to remember important facts and ideas so that they may be utilized in thinking and acting; but a good test of the acquisition of information will employ language that is not identical with that used in a textbook, and will involve the use of facts and ideas rather than their mere reproduction. On the other hand, the test items should be phrased in as lifelike a setting as possible.

Most teachers are familiar with objective tests which measure the acquisition of information and related skills in reading, arithmetic, spelling, history, geography, science, industrial arts, and fine arts. Any well known and recent book on "tests and measurements" will provide a wealth of suggestions for tests of this sort. At the elementary school level, for example, a battery of achievement tests, such as the Stanford,⁴ Metropolitan, Modern School,⁵ California,⁶ and Unit

⁴ The Stanford, the Metropolitan, and the Evaluation and Adjustment series are published by the World Book Company. The Individual Profile Chart is reproduced here by permission of the World Book Company, Yonkers, New York.

⁵ Published by the Bureau of Publications, Teachers College, Columbia University, New York.

⁶ Published by the California Test Bureau, Los Angeles, California.

STANFORD ACHIEVEMENT TEST

Intermediate Battery
Complete

FORM
J

TRUMAN L. KELLEY • RICHARD MADDEN • ERIC F. GARDNER • LEWIS M. TERMAN • GILES M. RUCH

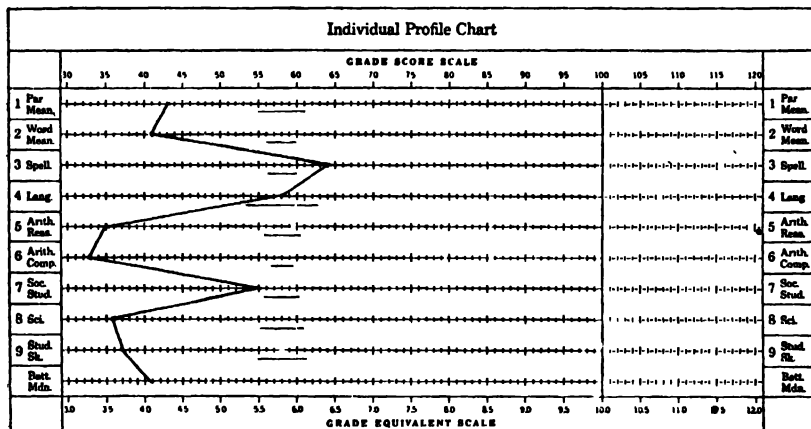
Name _____ Age _____ Grade _____ Boy or girl _____

Teacher _____ School _____ Date of birth _____

Year Month Day

City or Town _____ State _____ Date _____

	1 PAR. MEAN.	2 WORD MEAN	3 AVER. READ.	4 SPELL.	5 LANG.	6 ARITH. REAS.	7 ARITH. COMP.	8 AVER. ARITH.	9 SOC. STUD.	10 SCI.	11 STUD. SK.	BATTERY MEDIAN
Grade Equiv.	43	41		64	58	35	33		55	36	37	
Age Equiv.	4.5	4.4		6.7	6.2	3.6	3.3		5.8	3.8	4.1	
%ile Rank												



Grade equivalent values above 10.0 are extrapolated values and not to be interpreted as signifying the typical performance of pupils of the indicated grade placement. (See Directions for Administering)

Issued 1953 by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois
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Individual profile chart. Reprinted by permission.

Scales of Attainment,⁷ may be cited. At the high school level, the Evaluation and Adjustment series and the Cooperative Test⁸ series illustrate the available tests for evaluating mastery of various high school subjects.

Sample items illustrate the types of test exercises that are characteristic of such tests. The reader who is interested in a more detailed knowledge about such tests should inspect actual copies of the tests. These are usually available in the test file of the college library.

ILLUSTRATION OF A READING TEST EXERCISE

From the icy seas of the Arctic, the *Westwind* returns this month. For half a year, the U. S. Coast Guard icebreaker has been on its annual tour of duty, carrying supplies to military bases in the far north. The sturdy ship can break through ice 12 feet thick. Its prow rides upon the ice. Then, by using special equipment, the ship rocks until it breaks the ice into fragments and makes a passage for itself.

1. The best name for this story is
 - A. A Rocking Ship
 - B. Icebreaker Returns
 - C. U.S. Coast Guard
 - D. Arctic Seas Are Icy
2. The *Westwind* was away from home for
 - A. six months
 - B. two years
 - C. half a month
 - D. 30 days
3. You can guess that the *Westwind* was built
 - A. with thick sides
 - B. like all Navy ships
 - C. in cold weather
 - D. at a military base
4. The word *annual* means
 - A. first
 - B. last
 - C. every year
 - D. twice a year

ILLUSTRATION OF A MATHEMATICS TEST EXERCISE

Which one of the following is the largest number of pages?

- A. 199 pages B. 109 pages C. 201 pages D. 210 pages

If you know the price of one bushel of apples, what is the quickest way to find the cost of 16 bushels of apples?

- A. adding B. subtracting C. multiplying D. dividing

ILLUSTRATION OF SOCIAL STUDIES TEST EXERCISE

American workers organized in labor unions after 1865 to

⁷ Published by the Educational Test Bureau, Minneapolis, Minnesota.

⁸ Published by the Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

- A. seek the overthrow of capitalism.
- B. seek better wages and working conditions.
- C. seek political control of the government.
- D. aid immigrants in becoming better Americans.

EVALUATING GROWTH IN WORK-STUDY SKILLS

Work-study skills, so far as they have been defined for testing and appraisal purposes, are usually identified with the capacity to read maps, graphs, charts, and tables, to use the table of contents and the index of a book, and to find items of information in reference books. In addition, elementary as well as secondary schools are placing an increasing emphasis upon effective use of the school and local libraries, which involves such skills as knowing the effective use of library privileges, the techniques of withdrawing and returning books, the numbering or filing system of the books, and so on.

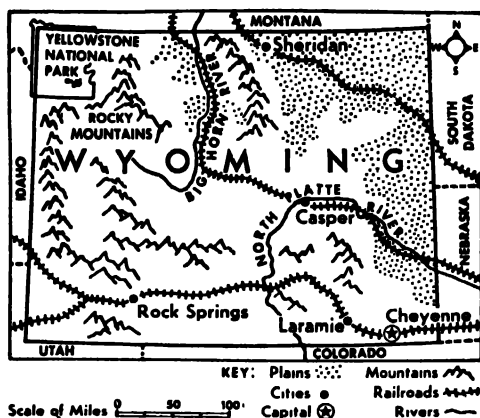
The most widely used test in work-study skills are the Iowa Every-Pupil Tests of Work-Study Skills (distributed by Houghton Mifflin Co., Boston, Mass.); the Stanford Work-Study Skills Tests (published by the World Book Co., Yonkers, N.Y.); and the SRA Achievement Series—Intermediate: Work-Study Skills (published by Science Research Associates, Chicago, Ill.). Illustrative items of such test exercises are reproduced below.

ILLUSTRATION OF USING SOURCES OF INFORMATION

1. Suppose your family is planning a trip to Africa. You want to know which oceans you will cross. You look at a:
 - ☐ A. map of the U. S.
 - ☐ B. world-map
 - ☐ C. road map
 - ☐ D. map of Africa
2. You want to show your class that your ship will disappear over the horizon when it leaves the U. S. You can show this by moving a toy ship over a:
 - ☐ A. map of the U. S.
 - ☐ B. map in an atlas
 - ☐ C. map in an encyclopedia
 - ☐ D. globe
3. A friend tells you that someone will give a talk about Africa on the radio. "At what time?" you ask. He does not know. To find out, you look in:
 - ☐ A. an almanac
 - ☐ B. a news magazine
 - ☐ C. a book about radio
 - ☐ D. a newspaper

Recent Development in Evaluating Attitudes

Closely related to the evaluation of interests, and using similar ap-

ILLUSTRATION OF TEST OF MAP-READING ABILITY

1. Big Horn River flows:
☐ A. north ☐ C. east
☐ B. south ☐ D. west
2. To go from Sheridan to Yellowstone Park you go:
☐ A. north ☐ C. east
☐ B. south ☐ D. west
3. The circled star means that Cheyenne is:
☐ A. on the plains ☐ C. the state capital
☐ B. in the mountains ☐ D. a manufacturing center
4. To fly from Casper to Rock Springs, you cover about:
 (Use the scale of miles on the map to find out.)
☐ A. 1,700 miles ☐ C. 170 miles
☐ B. 50 miles ☐ D. 15 miles

praisal techniques, are scales for the evaluation of attitudes. Although there is some controversy about the nature of attitudes, it is generally assumed that some attitudes that teachers plan to develop through the curriculum may be called specific and others may be called general. There is no universal agreement as to the kinds and significance of either specific or general attitudes that should be developed in schools. These are matters relating to a social and educational philosophy. Certain attitudes, however, which are favorable to social, scientific, and esthetic improvement are generally deemed highly important by most schools. The development of such attitudes is usually not assigned exclusively to any one subject or area of the curriculum.

Attitudes, when defined as expressions of opinion, have been measured more or less adequately by such measures as Thurstone's opinion scales on war, the church, God, the Negro, the Japanese, the Chinese, and other phenomena and problems related to topics in the social field.⁹ These scales employ an equal-appearing interval technique for weighing the intensity of a statement for or against some object or ideas.

Using the agree-uncertain-disagree technique, other authors have constructed generalized measures of social attitudes toward racial, national, and international ideas and phenomena. The Scale of Civic Beliefs,¹⁰ for example, consists of such statements as "The Japanese

⁹ Published by the University of Chicago Press, Chicago, Illinois.

¹⁰ Published by the World Book Company, Yonkers, New York.

are a sly and crafty race" and "Labor unions have accomplished much good." The pupil indicates that he agrees, disagrees, or is undecided in his response to each item. An alternate form of the scale with items of Form A and Form B matched permits a consistency score or index.

Recent Developments in Evaluating Interests

Interests have long been considered one of the fundamental factors in motivating the acquisition of functional information, skills, appreciations, and discriminations. Interests may perhaps be best defined for purposes of this discussion as those drives that lead the individual to his preferences in personal efforts and conduct.

Various techniques have been employed to evaluate interests. The first recorded study of reading interests, for example, employed an analysis of book withdrawals. It is relatively easy for anyone who has access to the withdrawal records of a school or public library to discover the frequency with which particular books have been withdrawn. Certain limitations inhere in this method: The pupils' choices are limited to books found in the library; moreover, course requirements and other pressures influence the choice, and unless other checks are made, the investigator has no way of knowing whether or not the pupil liked the books he withdrew.

A second technique of evaluating interests may be called the "questionnaire method," of which there are several variations. The method most frequently reported is to ask the pupil to list the materials he has read or the activities he has performed over a given period of time. Then he is asked to indicate those which he liked best. The following example will illustrate one of the interest questionnaires.

Here are some things that some boys and girls like to do. Blacken the spaces as follows:

L—is blackened if you like doing it.

I—is blackened if you are unable to decide whether you like or dislike it.

D—is blackened if you dislike doing it.

		L	I	D
1.	Following day-by-day reports of Congress	1.		
2.	Meeting people you have not met before	2.		
3.	Making up problems in arithmetic	3.		
4.	Carving wood or soap	4.		
5.	Writing poems or making rhymes	5.		

Here again certain limitations are evident. Pupils have difficulty in remembering materials read and activities performed, particularly if some period of time has elapsed between the activities and the recording. Pupils will be influenced, also, in naming their favorite activities by the standards they know to be approved by the teacher.

A third technique uses diaries, logs, or journals which students or teachers keep in a cumulative fashion. The reading record, after the pupil has made a cumulative log of his reading of books, newspapers, and magazines, is scored so that each entry is assessed in accordance with a predetermined scale of values set up by a jury, and by a special formula to denote the maturity of the reading level of the book, magazine, or newspaper article recorded. Thus it is possible to obtain indexes both of the average maturity and of the range of interests. Adaptations of this technique might be made in other areas of the curriculum of the elementary and secondary schools.

Recent Developments in Evaluating Critical Thinking

An objective to which almost any teacher in any subject area subscribes is the development of pupils' critical thinking powers. This has become a prominent objective of the natural and social sciences. From the work that has been done both in the curriculum and in evaluation, several convenient aspects of thinking may be tested by prepared scales. They are: (1) the interpretation of data; (2) the application of principles and generalizations to new situations; and (3) recognizing the logic of an argument or the nature of proof used in materials presented in the curriculum.

INTERPRETING FACTS

For the objective of scientific thinking, certain experimental efforts have been made to construct items that measure the ability to generalize experience or to interpret data and to apply principles of a science to a described situation. The test of ability to interpret or to generalize may be illustrated by the following exercise, in which the pupil is asked to indicate whether each statement given is (1) a true interpretation of the facts given; (2) an interpretation that goes beyond the facts given; or (3) an interpretation contradicted by the facts given.

<i>Temperature of Surroundings, Centigrade</i>	<i>Calories Lost by Radiation and Conduction</i>	<i>Calories Lost by Evaporation</i>	<i>Total Calories Lost</i>
7°	78.5	7.9	86.4
15	55.3	7.7	63.0
20	45.3	10.6	55.9
25	41.0	13.2	54.2
30	33.2	23.0	56.2

- a. The total heat loss of the human body by evaporation is the same at all temperatures (3)
- b. At zero temperature no calories are lost from the human body by evaporation (3)
- c. The number of calories lost by either radiation and conduction or evaporation from the human body increases steadily as the temperature rises (3)
- d. If the temperature of the surroundings is higher than that of the human body (about 37° C), no heat can be lost by radiation and conduction from the body (2)
- e. The human body loses more heat by radiation and conduction than by evaporation at all environmental temperatures from 7° C to 30° C (1)
- f. The calories lost from the human body by radiation and conduction decrease as temperature of the surroundings increases, but the calories lost by evaporation increase (1)

In the example above, careful study will indicate why each of the items has been marked either 1, 2, or 3. As indicated, the ability called for is that of sifting facts and adding facts together so that a reasonable interpretation can be made.

APPLYING PRINCIPLES ¹¹

The illustration of the application of principles related to a fact or situation may be comprehended in the following example from an Application of Principles Test:

EXERCISE: Many bare spots in the lawns are not caused by a lack of rain, but by our newest insect pest, the Japanese beetle. It lives in the ground in the winter, and eats the roots of the grass in the spring. After

¹¹ Some very helpful articles dealing with the construction of objective tests to measure such abilities as the ability to infer, the ability to generalize, and the ability to apply principles have appeared in the *Educational Research Bulletin* (published at the Ohio State University) since the 1930's. Similar articles have appeared from time to time in other professional journals.

cating the grass roots, the beetle changes its form and comes out of the ground early in July. The beetles come in hundreds, settle on the roses, and eat the petals. Then they eat any other flowers in the garden. When these are eaten, the beetle eats the leaves of trees and shrubs. This beetle, which was accidentally brought into the United States, was first noticed in New Jersey in 1916. Its food was plentiful, the climate right, and best of all, the beetle had no natural enemy here, so it increased in numbers. By 1939 the Japanese beetles were found as far north as Maine, as far south as the Carolinas, and as far west as Michigan and Ohio. Beetle traps and poison sprays have been used to stop the spread of the beetle, but they haven't been successful. The Government has even imported birds which are the beetle's natural enemies in Japan, but the birds died in this country.

APPLYING A GENERALIZATION TO A FACT

All the statements below are true. Look in the paragraph to see whether or not the statement applies to a particular fact or concept. Then blacken the space under:

- 1—if a statement applies clearly to a fact given
- 2—if you are not sure a statement applies to a fact given
- 3—if the statement is not related to any fact given

	1	2	3
1. A plentiful food supply is necessary so that insects may live.	1. <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Some places have cold winters and hot summers.	2. <input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Planting the same crop on land year after year causes good soil material to be used up.	3. <input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Some animals change their form several times till they look just like their parents.	4. <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Some animals are warm-blooded.	5. <input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Natural enemies check the spread of insects.	6. <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Some insects live only one season, leaving eggs which hatch in the spring.	7. <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Insects have very great appetites.	8. <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Careful study of the exercise just given indicates that the student is asked to apply generalizations or principles in order to explain specific facts or concepts. The emphasis here is not on adding elements or facts together to arrive at a generalization, but rather on applying a generalization to a specific fact.

Recent Developments in Evaluating Personal-Social Adaptability

All areas of the curriculum are assumed to contribute toward per-

sonal social adaptability. At the present time it is difficult to get any clear and precise definition of this objective; hence, many differences of opinion occur in discussions. These differences are often traceable to the fact that different definitions are used for a generalized trait.

Measurement of personal and social adjustment has used a variety of methods and means. These range from the free-association method, self-descriptive adjustment questionnaires, projective techniques, and psychoneurotic inventories to rating scales, anecdotal records, behavior description, sociometric techniques, case study methods, and psychoanalysis.

The free-association method, which is not widely used, allows an individual to react to certain words, as in the Kent-Rosanoff Free Association Test,¹² or to certain objects, as in the Rorschach Ink Blot Test and pictures in the Thematic Apperception Test. Another means of gathering evidence is the disguised test, which may be illustrated by the Maller Self-Marking Test,¹³ in which the honesty of pupils in grading their own paper is measured.

Improved rating scales for judging conduct and behavior have appeared. Several of these have been designed for use at the elementary school level, including the Haggerty-Olson-Wickman Behavior Rating Scale,¹⁴ and the Winnetka Scale for Rating School Behavior and Attitudes.¹⁵

In self-descriptive scales at the elementary school level, the most widely used scale is the California Test of Personality.¹⁶ Such scales at the secondary school level are similar in purpose and pattern of development. They include the Thurstone Personality Schedule,¹⁷ Bernreuter Personality Inventory,¹⁸ and California Test of Personality.¹⁹ By means of a pupil's self-descriptive marking, the teacher or school officer attempts to draw inferences about mental health and emotional stability. When supplemented by close and intelligent per-

¹² Published by C. H. Stoelting Company, Chicago, Illinois.

¹³ Published by the Bureau of Publications, Teachers College, Columbia University, New York City.

¹⁴ Published by the World Book Co., Yonkers, N.Y.

¹⁵ Published by Winnetka Educational Press, Winnetka, Illinois.

¹⁶ Published by California Test Bureau, Los Angeles, California.

¹⁷ Published by the University of Chicago Press, Chicago, Illinois.

¹⁸ Published by the Stanford University Press, Stanford University, California.

¹⁹ Published by the California Test Bureau, Los Angeles, California.

sonal observations, the self-descriptive scales are valuable methods of appraisal.

Sample items from a self-descriptive behavior scale that was devised and used by the author in a large city school system will illustrate this type of scale:

- | | | |
|---|-----|----|
| 1. Are you troubled at night by dreams about your work? | Yes | No |
| 2. Do you sometimes see spots "swimming" before your eyes? | Yes | No |
| 3. Do you lose your temper and get angry easily? | Yes | No |
| 4. Do you like to see others in pain? | Yes | No |
| 5. Do you find it more pleasant to live in a "make-believe" world than in the real world? | Yes | No |

Such items as these may reveal a pattern of fears, nervous habits, escapes from reality, lack of emotional control, and the like, that are often symptoms of present or probable psychoneurotic behavior in an individual. Self-descriptive scales, however, should be supplemented by evidence gathered from interviews, observations, and anecdotal records.

SOCIOMETRIC TEST

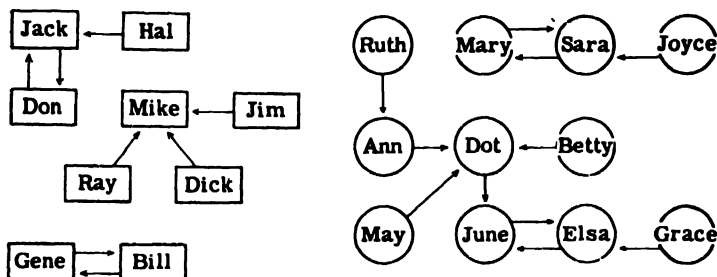
Sociometric tests are methods for revealing actual natural groupings and for diagnosing personal association patterns of children or adults. Each individual is asked to express with whom he would like to associate in a common situation or enterprise. Sociometric tests are valuable aids in assessing personal-social adaptability; they reveal the popular child, the isolated child, mutual friends, and cliques in a group of children.

The friendship-choice sociometric test is used generally as follows: A fourth-grade class is planning to visit an airport as part of their study of the topic of "aviation." The teacher explains that she will try to arrange companions for the trip as best she can on the basis of the children's own choices. Then she tells the children.

Write your own name and under it three choices of pupils you would like as a companion on the trip. Put 1 next to your first choice, 2 next to your second choice, and 3 next to your third choice.

When these choices are diagrammed, we have a sociogram.

The interpersonal structures of children's groups, when interpreted in terms of motivations for their choices and projective expressions in oral or written form, reveal personal and social factors that are significant for the mental hygiene of growth and development.



Sociograms of 20 Fourth-Grade children.

ANECDOTAL RECORDS

Anecdotal records and *behavior descriptions* have been used more or less widely to obtain systematic records of children's behavior. The value of anecdotal records has been emphasized by Olson²⁰ and Randall.²¹ Difficulties, however, arise when teachers are not trained observers and when they do not have sufficient time to observe the behavior of individuals or to record it systematically and adequately. Often the record becomes unwieldy, and frequently the anecdotes are not oriented toward any particular point or factors of personality.

ANECDOTAL RECORDS BY TEACHER A ABOUT JANE (10 YEARS OLD) ON
THE TOPIC OF PERSONAL ADJUSTMENT

Sept. 10—Jane cried when she failed to solve an arithmetic problem correctly.

Oct. 3—Shoved without provocation or reason another girl standing near her.

Oct. 9—Refused to take part in playground games with other girls because she was not chosen as a leader of one of the groups.

Oct. 15—Used ridicule to belittle Mary, a classmate, who prepared an elaborate report for the social studies class.

Nov. 3—In anger struck Martha, who caught the basketball which Jane missed; sulked when teacher asked reason for striking Martha.

Interpretation: In this sample of anecdotal records, Jane reveals a pattern of emotional and social immaturity, and poor adjustment to others of her age. She shows little emotional control and is jealous of others who succeed better than she does. From other data not

²⁰ Olson, W. C., *The Behavior-Journal Manual of Directions and Forms* (Ann Arbor, Mich.: University Elementary School, University of Michigan, 1935).

²¹ Randall, J. A., "The Anecdotal Behavior Journal," *Progressive Education*, Vol. XIII (1936), pp. 21-26.

given here it is known that she is a "spoiled" child at home, is allowed generally to have her own way, and uses crying and tears with her mother when denied something she wants.

The values of the anecdotal record may be summarized briefly as follows: First, the observation and recording of significant conduct and behavior by all teachers should direct attention away from the mere teaching of facts. Systematic observations should be recorded and be available for summarization. Second, teachers should record instances of behavior which indicate both favorable and unfavorable characteristics of the pupil. Practice in recording anecdotes will indicate those which are significant, especially if these anecdotes are discussed in conferences by teachers concerned. Third, the anecdotes should be as concrete and concise as possible, given with a minimum of interpretation; facts are more helpful than inferences or interpretations. Fourth, periodic conferences of the teachers should be held to present, review, diagnose, and interpret anecdotal records and related data. All school officers should participate in such summarization and synthesis of data. Anecdotes will fill in gaps in data not gathered by other means.

Statistical Terms Frequently Used in Measurement

NORMS

The simplest sort of statistics used in measurement is the so-called "norms" or *equivalent scores*, which translate raw scores on tests into more meaningful language. A raw score is the number of items successfully achieved by an individual who is taking a test.

A norm, or equivalent score, for a test is a numerical index of the average achievement of pupils of a given grade, age, or other homogeneous group for which the norm is being determined. A norm is a statement of present achievement of a group, and not a universal standard of accomplishment. In most cases the average—mean or median—achievement of a group is taken as the norm, but sometimes other points, such as quartiles or percentiles, are used. Most norms are general norms; that is, they are based upon the scores from a fairly large number of pupils who live in widely scattered parts of the country. In addition to those, however, local norms for particular states, cities, or even buildings are sometimes used. In the

elementary school, the grade score is frequently used. Thus, a pupil may have obtained on a reading test a raw score of 35, which can be translated, let us say, into an equivalent grade score of 5.5. This means that his score represents achievement which is at the fifth grade, fifth month, level.

A *grade norm* is a statement of the test accomplishment of pupils in a particular grade. The mean or median score of a large and unselected group of pupils in a single grade is usually employed for this purpose. Grade norms are ordinarily based upon the supposition that a school system contains twelve grades in the elementary and secondary schools. If a school system has a different form of grade organization, adjustments of norms are necessary. Most tests have grade norms for each month of the school year, but others have norms at the end of half-years, such as for February or June.

In a similar manner, equivalent age scores are sometimes provided on a test. The equivalent age score for a raw score of 35 might be 10-8, which would mean that this score was the average achieved by pupils who are 10 years, 8 months old.

An *age norm* expresses the mean or median achievement of a group of pupils of designated chronological age. Unless otherwise stated, an age norm is usually an average score made by pupils ranging from the designated age up to the next. For example, a score given as the norm for ten-year-old children is ordinarily understood to be for children who are at least ten years of age but not yet eleven.

Percentile norms correspond to the points which divide the total number of cases contained in a frequency distribution of a norm group into 100 equal parts; that is, into 100 parts each of which contains the same number of cases. Although the more common method of reporting norms is in terms of the median, which is the same as the fiftieth percentile, this is frequently supplemented by a statement of other points in the distribution for a given age or grade. Sometimes the scores corresponding to the tenth, twentieth, and every successive tenth percentile are given, and sometimes those at other percentile points are supplied. Such a score may represent, for example, the percentage of pupils of a fifth grade who have achieved a raw score of 35 on the reading test. This score might be translated, let us say, into a percentile score of 53 for fifth grade pupils. This would mean that a fifth grade pupil achieving a raw score of 35 ranks at a point above 52 per cent and below 47 per cent of fifth grade children.

EDUCATIONAL AGES AND QUOTIENTS

Pupils of a given chronological age may vary on a test from the average score of their age group. Some will be far below and some far above it. A ten-year-old pupil, for example, may have a reading ability corresponding to that of the average seven-, eight-, nine-, ten-, twelve-, or fourteen-year-old pupil. If a ten-year-old pupil achieves a score equivalent to that obtained by the average nine-year-old, it is said that he has a *reading age of nine*. If he obtains a score equivalent to that of the average ten-year-old pupil, his reading age would be ten. In a like manner, scores on arithmetic tests, history tests, and tests in geography and other subjects are translated into comparable or equivalent statistics in the interpretation of test data.

The individual's composite or average educational achievement on a battery of achievement tests is called his "educational age," which means his general ability to achieve in school subjects. The educational age is comparable to the mental age obtained on an intelligence test. When the educational age, or E.A., is divided by the chronological age, or C.A., a quotient called the "educational quotient," or E.Q., is obtained. Let us suppose that a boy who is chronologically ten years old has an educational age of seven; his E.Q. will be 70. On the other hand, if he has an educational age of ten and a chronological age of ten, his E.Q. will be 100. The E.Q. indicates the achievement status of the pupil in terms of the relation of his C.A. to his E.A.

ACCOMPLISHMENT QUOTIENT

Another quotient sometimes used is called the "accomplishment quotient." It is computed by dividing the E.A. obtained from a battery of achievement tests by the M.A. obtained on an intelligence test. Since the educational age is divided by the mental age, this means that accomplishment is evaluated in terms of mental age rather than of chronological age. Generally, such complicated statistics seem to have the prestige of scientific treatment. Actually, however, the A.Q. does not work out satisfactorily in practice. The A.Q. has a numerator and a denominator that are derived from other data and are, therefore, liable to have errors, sometimes small and sometimes large. If the errors in the E.A. and the M.A. are large and in opposite directions, the A.Q. will be very much in error. In the second place,

the A.Q. favors the dull pupils and penalizes the bright pupil. For example, the A.Q. of a dull ten-year-old with a mental age of eight will be higher than the corresponding A.Q. of a bright ten-year-old with an M.A. of 12. According to the assumptions underlying the A.Q., the dull ten-year-old has to accomplish at age ten an M.A. of 10, but the bright pupil has to accomplish an M.A. of twelve. The bright pupil has frequently had little opportunity to bring his achievement to the twelve-year level because promotions are made in most schools not on the basis of mental age, but on the basis of chronological age. For these reasons it is recommended that the accomplishment quotient should not be used for individual pupils and should be used with proper caution when applied to class group averages.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • In parallel columns list some of the desirable and the undesirable uses of test results.
- 2 • What is meant by the statement that tests may freeze or retard curricular changes?
- 3 • What are some of the advantages of the essay examination and what are some of the advantages of the objective-type examination?
- 4 • What can the teacher do to avoid the usual weaknesses of the essay examination?
- 5 • Prepare an objective test on this or another chapter, using the different types of items which have been illustrated.
- 6 • Examine an achievement test in history or science to determine its curricular validity. Are the items representative of the concepts in a textbook in the subject?
- 7 • What conditions would you set up for the reliable rating of an essay examination?
- 8 • What subtests are usually included in an achievement test battery for elementary school pupils?
- 9 • Describe briefly five kinds of tests or techniques that might be used to appraise personal and social adjustment of pupils.
- 10 • Why is it undesirable to use an A.Q. for the individual pupil?
- 11 • Define and illustrate the following terms: grade score, educational age, chronological age, arithmetic age, intelligence quotient.

SELECTED REFERENCES FOR FURTHER
READING AND STUDY

- Buros, Oscar K. (ed.), *The Third Mental Measurements Yearbook*. New Brunswick, N.J.: Rutgers University, 1949.
- , *The Fourth Mental Measurements Yearbook*. Highland Park, N.J.: The Gryphon Press, 1953.
- Greene, E. B., *Measurement of Human Behavior*, Rev. Ed. New York: Odyssey Press, 1952.
- Greene, H. A., A. N. Jorgenson, and J. R. Gerberick, *Measurement and Evaluation in the Elementary School*, Second Ed. New York: Longmans, Green and Co., 1953.
- , *Measurement and Evaluation in the Secondary School*, Second Ed. New York: Longmans, Green and Company, 1954.
- Jordan, A. M., *Measurement in Education*. New York: McGraw-Hill Book Co., 1953.
- Odell, C. W., *How to Improve Classroom Testing*. Dubuque, Iowa: Wm. C. Brown Company, 1953.
- Raths, Louis E., "Appraising Certain Aspects of Student Achievement," *Guidance in Educational Institutions*, Thirty-Seventh Yearbook, Part I, National Society for the Study of Education, Bloomington, Ill.: Public School Publishing Company, 1938, Chap. 3, pp. 89-117.
- Remmers, H. H., and N. L. Gage, *Educational Measurement and Evaluation*, Rev. Ed. New York: Harper & Bros., 1955.
- Ross, C. C. and Julian C. Stanley, *Measurement in Today's Schools*, Third Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954.
- Rotlincy, John W. M., *Evaluating and Reporting Pupil Progress*. Washington, D.C.: Department of Classroom Teachers, American Educational Research Association of the National Education Association, 1955, 33 pages.
- Stalnaker, John M., "Essay Examinations Reliably Read," *School and Society*, Vol. 46 (1937), pp. 671-72.
- Travers, Robert M., *How to Make Achievement Tests*. New York: The Odyssey Press, 1950.
- Weitzman, Ellis, and Walter J. McNamara, *Constructing Classroom Examinations, (A Guide for Teachers)*. Chicago: Science Research Associates, Inc., 1949.
- Wrightstone, J. W., J. Justman, and I. Robbins, *Evaluation in Modern Education*. New York: American Book Co., 1956.

18

GUIDANCE AND EDUCATION

Guidance, in its broadest interpretation, is inherent in education, whether formal or informal. The family, the community, and the school transmit not only skills, techniques, information, and knowledge, but also develop values, interests, ideals, tastes, and attitudes. Interactions of individuals and groups tend to associate satisfactions with certain behavior. The principles of learning are as applicable in transmitting a culture as they are in teaching arithmetic.

In this chapter we are concerned not so much with the administration of formal guidance programs and specific tools as with psychological principles. The classroom teacher, at whatever level he teaches, is greatly concerned with the guidance function of education.

Cooperation in Guidance •

The roles of parents, teachers, or youth and community leaders are often as determinative in the guidance of children as the roles of those formally charged with guidance responsibilities. Parents and teachers frequently look to specialists for leadership, direction, and help on critical problems. Professionally trained school counselors and clinical psychologists have unique contributions to make. There are points at which the child and those charged with his care are best guided by the judgment of persons skilled in psychological analysis, trained in the use of standardized instruments, acquainted with useful information in varied fields, and adept at diagnosis and evaluation.

Guidance is a continuous process, involving many individuals and agencies. Special guidance services should be available to all. Persons who recognize the limitations of their knowledge and skills seek the help of specialists. The teacher sensitive to behavior patterns and

trained to recognize symptomatic behavior seeks expert counseling for pupils whose problems, either in scope, severity, or intensity, cannot be suitably handled in the classroom. In turn, a school counselor may recognize symptoms of difficulties requiring the services of specialists in a variety of areas. Timely referral to a suitable agency may be indicated. The resourceful school counselor who understands children and knows the community increases his effectiveness by making use of many sources of information and expert help. The counselor's role is a complex one. He develops skills in observing, gathering data, discovering relationships, drawing inferences, making hypotheses, suggesting and testing solutions, providing information, facilitating communication on many levels, and evaluating his own role. The trained counselor utilizes what he can from many disciplines; he relies heavily on his knowledge of psychology and on his understanding of the dynamics of human personality. He is concerned with both objective data and the subtleties of human behavior in the process of counseling. He cooperates with parents, school personnel, and many community agencies in striving for the optimum development of each child.

The Guidance Movement

Plato and other early philosophers and educators were aware of individual differences of endowment. It was the psychologists of the twentieth century, however, who stimulated widespread interest in the range and distribution of human abilities and in the implications of these differences for education and guidance. The development of instruments for measuring the capacity to learn as well as achievement in certain defined areas, the refinement of such instruments, the ensuing research, and the continuing development of objective means of characterizing aptitudes, interests, and personality traits have provided teachers and personnel workers with increasingly accurate and useful tools for estimating both the status and potential of individuals. No longer are people generally dependent on hunches and insights, subjective human judgments, and limited individual experience. Growing scientific knowledge has made possible the adjustment of educational programs and curricula to meet individual needs and goals.

Increasing complexity of the demands and opportunities in the world gave impetus to the vocational guidance movement early in the

twentieth century. Vocational guidance was the first form of organized guidance. For the most part, early mistakes in formal guidance were the result of giving specific advice, holding a narrow concept of human personality, not recognizing the complexity of the problem, not providing for flexibility, and not using the findings of experimental psychology. The acceleration of economic and technological changes and the growing insight into the dynamics of human personality are responsible for major changes in the guidance point of view.

The guidance movement in education takes a broad view of the problems of social adjustment, personality development, mental health, and educational guidance toward goals of self-realization. Vocational guidance today is but one aspect of the over-all objective of individual development as a member of society.

The Guidance Point of View in Education

The guidance point of view in education today is characterized by its aim to assist each individual to make choices and decisions that are congruent with his abilities, interests, and opportunities and consistent with accepted social values. The individual makes his own decisions and choices, but with adequate guidance during school years he does so with some knowledge and understanding of self, of the demands of society, of the realities as well as the creative potentialities in the world today, and of opportunities, rewards, and penalties. The life experiences of the child contribute to these understandings. Adults provide many opportunities for children to develop. Teachers, school administrators, and guidance personnel select or arrange the environment that provides the opportunities for experience and growth in needed skills and attitudes, as well as information and knowledge, which serve as guides for behavior.

Knowledge of self grows with experience, but it is often nebulous and nonverbalized. Understanding of self can be enhanced by guided experiences and careful self-evaluation. The child who has opportunities to explore the world in a variety of activities, social as well as academic, begins to recognize his own uniqueness as well as his relations to others. In associating satisfactions, success, and rewards with some activities, he develops a range of interests and aptitudes. When the child experiences failure, frustration, or punishment, adults may need to alter their attitudes and to make adjustments in the environ-

ment to provide more suitable learning experiences. Throughout a program of planned activities, the skillful leader or teacher arranges opportunities for identifying strengths and weaknesses, for using problem-solving techniques, and for evaluating progress. The teacher who recognizes the differential abilities in every child plans experiences, both in the classroom and outside, that contribute to each child's growth. The maximum realization of each child's potentialities is the teacher's goal. In the process of evaluation, the teacher helps both the child and his parents to gain insight into the child's progress in many areas.

The teacher who is alert to the symptoms of maladjustment in the behavior of children calls upon his knowledge of psychology for help in analyzing the child's problems, seeks more information about the child and his environment, and consults others for guidance in diagnosis and treatment. The teacher who is interested in the child's personal development does not confine his observations of the child's behavior to the classroom but welcomes the opportunity to observe him on the playground and in his home as well. Many schools today have planned programs of home visitation so that teachers may understand better the dynamics of the child's behavior in relation to his family environment and so that channels of communication and cooperation may be established between home and school. Conferences with parents, as a regular part of the school's program of evaluation, contribute to the teacher's understanding of the home environment. The teacher, at whatever level he teaches, makes a significant contribution to the guidance of the child or youth by developing the pupil's self-awareness and self-understanding in his relationships with the world and the people about him. The extent to which the pupil himself participates in the evaluation of his own physical, mental, and social as well as academic progress determines the growth of his understanding about aspects of his own personality. A growing sense of personal responsibility and self-respect is characteristic of the adjusting child.

Knowledge of the demands of social living comes from experiencing rewards, punishments, successes, and failures. The well-planned educational program provides a consistent pattern of rewards for cooperative behavior in conformity with accepted social values and mores, as well as established penalties for violations of accepted patterns of behavior. A wide distribution of both individual and group

rewards for laudable behavior is sought by school personnel in striving to establish "good citizenship" patterns of behavior. Group goals are potent motivating factors. School administrators and teachers work closely with student groups in establishing worthwhile goals. Active participation in the realization of significant, democratically conceived goals is a rich learning experience for boys and girls. Worthy group objectives that are within the realm of possible achievement build school morale and provide the motivation for group activity. Peer pressure for conformity is an effective form of group discipline, but careful watchfulness is required to avoid abuses or misuses of such pressure. The master teacher strives both to develop group self-discipline and to maintain mutual respect for individuals within the group. Pupils who become aware of the dynamics of group control and who learn to evaluate group behavior in terms of goals, values, and performance are more adequately prepared to understand their roles in social groups.

Guidance in the Curriculum

Understanding of human behavior and adjustment is not solely the result of first hand experience. The richest curriculum cannot provide all the experiences nor anticipate all the problems that may be educationally productive. It is possible, however, to experience vicariously many things beyond the immediate environment. The impact of a good story, a great novel, a stirring drama, an inspiring biography, or a forceful film may stimulate critical thinking. The teacher of language arts is in a strategic position to suggest suitable reading, help the child interpret what he has read, and develop new understandings of society, human behavior, values, and ideals. Pupils who have a part in a carefully-selected school play have an opportunity to understand character through playing a role.

Information about the world at work accrues throughout the curriculum. Social studies teachers are in a unique position to develop certain national ideals and appreciations. Through the study of social problems, pupils develop respect for the work of their forebears as well as their contemporaries, grow in imagination about the work to be done in the world tomorrow, and relate the world of work to current interests and curiosities. Occupational and career information is acquired in most academic courses, as well as in exploratory curricula and general reading. Excursions, field trips, and films in many courses

contribute new concepts. Units on vocations, group work and individual counseling, the effective use of community resources, vocational conferences, and planned work experiences provide information about the opportunities in a variety of fields.

Vocational and Educational Guidance

Through curricular and out-of-school experiences, the pupil learns not only about specific vocations but also about how these are related and, perhaps most important, how to study about vocations. Information is useful to pupils in planning for life work, but in a dynamic society effort is required to screen and coordinate data and keep information consistent with trends, technological advancements, and data on current supply and demand. In a rapidly changing economy,



Guidance and counseling. (Board of Education City of New York.)

pupils should be counseled for the future—for the present, at least—and not be misguided by hearsay, by outdated information, by some individual's limited personal experience, or by well-intended but in-

accurate information. Vocational and educational guidance go hand in hand. Although information may be channeled through classroom teachers, the majority of school systems prefer to designate personnel as responsible for coordinating technical information and to provide them with means of communicating, directly or indirectly, with pupils and parents.

Vocational information is not the sole consideration, however, in vocational planning. To plan wisely, a pupil needs self-knowledge, knowledge of his interests and abilities, and understanding of the relationships between his potentialities and what is required in certain kinds of jobs. Children are likely, for a number of reasons, to set early vocational or career goals beyond the probability of achievement, and considerable readjustment of goals to more realistic likelihood of attainment is frequently necessary. This change is not too difficult if one has considered job "families" instead of specific jobs, if one has developed a respect for all fields of work, and if one is realistic in his self-appraisal. A wide range of abilities and aptitudes may be matched to a variety of jobs within a given industry or occupational field. Human abilities are not so specific that each individual could not probably succeed and be happy at a fairly wide range of jobs. The most regrettable loss to mankind is the failure to motivate superior individuals to achieve goals commensurate with their abilities. The need for maximum utilization of human talent is imperative.

For these reasons, as the pupil enters secondary school he should be helped to interpret his own record of abilities, achievement, and interests. The wise counsel of a homeroom teacher, guidance counselor, or classroom teacher helps him to perceive himself in relation to society and to envision reasonable goals. Early specific decisions on ultimate goals are neither necessary nor desirable, but early critical decisions on the course of study to follow in high school may affect opportunities in vital areas later. The pupil, and his parents, must be aware of the nature of his choices and their consequences. Attention should be directed, in planning a school program, to developing strengths and overcoming weaknesses, rather than merely to "taking subjects." Vocational guidance cannot be divorced from educational guidance. Knowledge of the wide range of useful talents places responsibility on teachers and counselors to inform pupils of educational requirements and opportunities at levels suitable to individual abilities and interests. The bulk of information, scattered in a variety of

sources, needs to be coordinated, kept up to date, and made available to pupils in usable form. When one considers that the *Dictionary of Occupational Titles* includes thousands of job titles, it is apparent that the information must be classified somehow into meaningful units. Group conferences with parents, as well as individual counseling, not only provide factual information and stimulate interest but also help the parents to understand the child's motivation.

The Role of Motivation and Interest

Motivation of the individual toward suitable goals is an essential ingredient in guidance. The pupil needs to understand that his current interests and successes—both academic and social—are predictors of possible future interests and successes. An interest inventory is sometimes used to advantage with pupils as early as the ninth grade to stimulate awareness of the role of interest in one's choice of activities. It appears that interest patterns are fairly well established by early adolescence and are relatively stable with adults. Interest in certain areas does not always indicate ability to perform at high levels in those areas. In evaluating information on interests, competent advisers require data on both achievement and ability as reflected by school records and test data. Care must also be exercised to distinguish fantasies from realities, to detect conscious or unconscious faking, and to consider the limitations of interest inventories or preference records.¹ In the use of any standardized instrument, overgeneralization from named factors is to be avoided. Acquaintance with validation procedures and the basis for isolating and naming factors in either interest or ability tests induces caution in the interpretation of results and the avoidance of crystal-ball techniques of guidance. The careful worker, of course, uses only norms based upon suitable populations.

Pupils are encouraged in certain interests by experiencing success in curricular and extracurricular activities, but often additional opportunities for exploration and trial need to be created. Often relationships between school experiences and possible future satisfactions need to be pointed out to pupils. The things a pupil likes to do may be essential ingredients in a career. When he experiences satisfactions in a particular activity and learns what the advantages of a related

¹ Rothney, John M., and Louis G. Schmidt, "Some Limitations of Interest Inventories," *Personnel and Guidance Journal*, XXXIII (December, 1954), pp. 199-204.

career may be, he begins to experience the motivation that may direct his efforts through several years of preparation. Often the motivation needs to be powerful to carry him through periods of hard work and seemingly unrewarded effort once his objective is established. Motivation is generated by experiences at home, at school, and elsewhere; it is reinforced by human drives and by personal needs for affection, approval, identification, mastery, prestige, satisfaction, and security. Differences in motivation frequently account for differences in achievement among pupils of comparable ability as measured by standardized tests. These considerations accentuate the significant guidance role of the teacher in the classroom.

Guidance in How to Study

Another factor contributing to differences in achievement among pupils of comparable endowments is the variation in pupils' abilities to organize their work and to study effectively. An important area of guidance, therefore, is specific training in how to study, how to learn, and how to work effectively. Such instruction, based on the psychology of learning, is an integral part of teaching every subject.

Interests and goals are essential to pupil achievement, but the pupil also needs skills and understandings. He is helped by instruction in a variety of techniques in reading, building vocabulary, using the library and references, taking notes, organizing work, and developing writing skills. Moreover, he needs to understand the influence of physical and mental health, the importance of rest and exercise, the role of diet and sleep, the significance of certain principles of hygiene, the need for conservation of eyesight, and the contribution of attitudes, goals, and purposes. Habits of beginning work promptly and finishing a task need to be established and maintained. Freedom from fears, worries, and anxieties is not always possible, but a healthy classroom climate helps pupils to control their emotions and direct their energies to constructive ends. A teacher who is balanced, wholesome, good-humored, and analytical in his approach to problems exemplifies what is meant by mental health.

In the teaching process, the learning activities of the pupil cannot be minimized. The teacher's approach to problem-solving should continuously develop pupils' understanding of the process. Participation in the use of problem-solving techniques in many contexts is essential if pupils are to grow in their ability to solve problems. The carefully-



Guidance in action. What is happening here? (Courtesy of the Chicago Public Schools.)

made assignment has a purpose and suggests a method of attack; its completion by the pupil has meaning. The guidance of learning activities eliminates both wasted effort and frustration. The competent teacher diagnoses difficulties, adjusts assignments for individuals, and helps pupils analyze and evaluate their own work. Rewards, recognition, and other satisfactions stimulate pupils to further effort and growth.

Group guidance in how to study is frequently supplemented by individual guidance and counseling. Individualized procedures include diagnosis of individual learning difficulties, exploration of factors contributing to the difficulties, development of individual study plans, and teacher-pupil conferences with a variety of purposes. In evaluation conferences with both pupils and parents, the teacher uses the techniques of the interview. Both teacher and counselor may need to interview a child and his parents to understand underlying problems of adjustment and to help the child develop new satisfying ways of meet-

ing his problems. Since skill in the use of interview techniques is basic in guidance and counseling activities, let us give some attention to this important technique.

The Interview Technique

There are two diverse methods of handling an interview: the directive and the nondirective. Even the extreme positions have merit under different circumstances. The highly directive approach is economical, particularly when the issue is clear-cut, but may interfere with further communication. The nondirective approach may be time-consuming but frequently discloses factors, not obvious at first glance, that are influencing outcomes. In the continuum of interpersonal relations the extremes may be thought of as the counselor-centered approach, in which he provides information and suggests direction, and the counsellee-centered approach, in which the counselor merely activates the process by which the counsellee makes his own choices and decisions. Usually the interviewer operates at some intermediate point in the continuum. The counselor adapts his approach to his point of view, his purposes, or the situation. The school counselor is usually flexible in the use of the interview technique.

Whenever possible, an interviewer usually prepares for an interview by assembling information that may bear on the case. The interview differs from a mere conversation in that it has a purpose, usually well-defined for the interviewer, interviewee, or both. However, except for the highly directive interview, it is profitable for the interviewer to maintain a somewhat flexible attitude in regard to the outcome or direction the interview may take. In the course of an interview, unanticipated aspects of the problem frequently arise.

Rapport between interviewer and interviewee is usually established by finding some common uncontested ground or pleasant mutual interest. By creating an atmosphere of cordiality and friendliness and relieving tensions, the interviewer facilitates communication. The pupil who feels that his interests are uppermost, that his confidences will be respected, and that the sincerity of the interviewer can be depended upon will cooperate much more readily than one who is on the defensive or one who senses that the whole matter is routine or already settled.

The skillful interviewer probably has in mind some strategic questions to ask, but he leads up to these carefully. The interviewer may

ask questions that direct the attention of the pupil or parent to certain paramount considerations or to neglected aspects of the problem. Another function of the interviewer's questions is to keep attention focused on a central issue. The interview is likely to break down or be misleading if negative feelings are aroused or the interviewer is "rejected" as a person before the issue is faced. Meanwhile, the interviewer encourages the interviewee to talk freely while he listens, being watchful for signs of tension or emotion and for information about related issues that may bear on the case. By reserving judgment as to the relative weight of different factors, the interviewer may find the elements in the situation falling into an unexpected pattern leading to hypotheses that may be more fruitful than those based on less information.

The skillful teacher or counselor leads the pupil to discover possible solutions for himself. If several possible solutions appear in the course of an interview, the pupil (or parent, as the case may be) is helped to consider the merits of each so that he has the opportunity to select that one which appears most appropriate. Such evaluation is a learning process in which both persons contribute basic information, share understandings, and weigh possible consequences in light of accepted values.

The acceptance of a plan of action is not the end of the counseling process. The interviewer, to fulfill his obligation, makes a record of the outcome of each conference and then follows up to determine if the plan selected has been put into action and if it is functioning effectively. If difficulties arise, the whole problem may be reconsidered and possible solutions reevaluated in terms of new data. Throughout the process, the interviewer evaluates his own behavior and the progress of the case in terms of certain criteria in order that he himself may grow in the subtle techniques of helping others to solve their own problems. The aims of objective guidance are satisfied only when the pupil makes progress in the ability to assess himself and his environment and to make those choices and decisions that lead to a satisfying life adjustment. The counseling process should strengthen the youth's purpose and motivation in directions which are optimum for him.

The interviewer—whether teacher, administrator, or counselor—takes certain risks in the process of personal guidance. He minimizes this risk by avoiding the sort of direction that might be interpreted

as advice or urging. He cannot be expected to take complete responsibility for eventual outcomes; there are many factors at work that influence results, and of some of these he cannot even be aware. Outcomes are partially predictable, but seldom simple. Moreover, the pupil who tries a solution at which he has arrived for himself is likely to follow through and find satisfaction in his resolution of difficulties. Much that has been said for the technique of the interview is applicable in the conduct of group conferences.

The case conference, where different aspects of a case are given professional consideration, implies an organized guidance program in which there is a high degree of cooperation among different workers who share not only data and information but also diagnoses and hypotheses in a given case. Much of the material is accumulated by interviews, from tests, and from records.

Cumulative Records

Planning and organization increase the efficiency of the guidance program. A system of cumulative records makes available to teachers and counselors basic data on physical health, family pattern, school progress, behavior, mental maturity, achievement, recognitions, participation and leadership, faculty ratings, test results, school plan, and personality ratings. The amount of data and form of the record are determined by local policy. It is desirable that information be comprehensive enough to be useful but that the process of gathering the facts not be burdensome. Data are not ends in themselves. The time-consuming process of record-keeping is worthwhile only insofar as data are useful. As a school staff grows in its ability to diagnose on the basis of information from tests and records, more comprehensive and more accurate records are required. Records that run continuously from kindergarten through high school are helpful in indicating trends, consistencies, and deviations. Some schools now extend their records to post-high school years to aid them in the process of follow-up and evaluation.

At certain points it may be desirable to screen or summarize information in the cumulative record. It cannot be overemphasized that it is only as counselors and teachers find the data useful and use them wisely and professionally that the record has merit. The possibility of error is always to be taken into consideration, and hypotheses need to be verified or rejected as circumstances indicate. For this reason, the

cumulative record and interview supplement each other. The opportunity for interview should always be available: the pupil should always feel his counselor's door is open or his teacher is pleased to have him drop in after school to "talk things over." With large classes, full schedules, routine duties, professional responsibilities beyond assigned classes, and school and community activities, however, school personnel are likely to find little time for the casual conversation. An inspection of cumulative records, coupled with classroom observations, helps the teacher to evaluate the needs of children who seek counsel as well as those who do not seek help. The cumulative record and observation are guides to the needs of both the individual and the group as a whole.

Group Guidance

Guidance in groups has many advantages. Not only is it more economical, but often it is more effective. Groups may be as large as a whole student body in assembly, particularly on matters of wide appeal or in areas of common concern. Group guidance is used efficiently in orientation programs, in pre-entrance contacts designed to make the transition from one educational level to another, in certain aspects of educational and vocational guidance, and on common problems of adjustment and social living. School organization makes possible group guidance in homeroom units or in the core curriculum. Vocational conferences or conferences on other timely questions can be arranged for pupils with mutual interests. The sharing of questions, suggestions, and facts can be stimulating, informative, and provocative. Probably more people share a limited number of problems than are burdened with uniquely different problems. Timely, accurate information given to groups often motivates adequate individual solutions. Some film producers have selected personal or social problems and dramatized situations with universal elements for the purpose of stimulating group discussion.

Another group approach uses the technique of creative dramatics or psycho-drama, in which individuals have the opportunity to play a role and to evaluate their part in the outcome as well as their feelings in the process. Only the trained psychologist is qualified to undertake therapy by this method, but a modified form of role-playing and characterization has long been used by teachers and other adults working with children.

Group guidance procedures, to be effective, require the close cooperation of teaching and counseling staffs in the assessment of problems, planning of procedures, stimulation of participation, follow-up, and evaluation in light of sound criteria. Care is necessary to assure that the needs of all students are met. Individual counseling supplements group guidance procedures.

Work Experiences

Group guidance procedures are particularly suitable in that part of the guidance program that is intended to orient pupils to work experiences. In many urban schools, a supervised work experience program is closely related to guidance services. Adolescents desire economic independence and often need financial help while in school. Enterprising youth find opportunities for employment, but a well-directed work-experience program provides more than financial rewards for pupils. A student placement service coordinated with the guidance program provides opportunities for boys and girls to explore different types of jobs or industries. If the pupil is counseled in placement so that he knows what to expect on the job and what is expected of him, his chances of a successful work experience are improved. Employment coordinators who work closely with both employers and employed pupils help both to see the educational potentialities in a job. A well-supervised program aims to give the employer satisfaction and at the same time to help the pupil appraise his own interests, strengths, and weaknesses. Too often the pupil who leaves school and who has not had employment guidance goes to an employer or an agency looking for "any" job—only to find that there isn't any job. Before leaving school and seeking a job, a pupil needs to know what he has to offer an employer, what an employer seeks, and how to present his qualifications for a job. Group discussions, dramatizations, and role-playing often precede actual experiences.

Group and individual guidance on how to find a job, how to apply for work, and how to succeed on a job is important for all school youth, whether the pupil is looking for a life occupation or for a temporary job to assist him financially toward a remote goal. Employer-employee relations are little understood by most boys and girls. Psychologically sound guidance in these important matters is well received when pupils are ready for employment. Simple and

direct methods are effective in preparing the pupil for a satisfying work experience.

Work experiences are, for many boys and girls, a crucial test of their abilities and personal adequacies. Successful experiences give them a sense of personal worth and may motivate them in new goals. Those boys and girls who do not succeed on the job need further guidance in self-evaluation. They will frequently see the need for further training or revision of their goals. A well-supervised work experience may be the means to realistic motivation in further education.

Guidance Is Continuous

We have seen that guidance is continuous throughout the educational program—from early school years to adulthood. Colleges have instituted extensive guidance programs to help students find those areas of study most compatible with pupils' abilities and interests, to shore up weak foundations, to direct students to productive areas of work, and to counsel students with respect to problems of adjustment. Employers provide guidance in their personnel services. Entry workers need orientation, men on the job seek advancements, and productivity generally is closely related to employee adjustment. Adult education institutions of all kinds are concerned with individuals' problems of readjustment to changing circumstances and aspirations. Retirement brings special problems of adjustment, and counselors for the aging may be more in demand as the aging population grows in number.

Problems of personal adjustment know no age boundaries. The teacher, the professional social worker, the spiritual adviser, the physician, the psychiatrist—each of these, and many others, help the individual to understand himself and to be more effective in his countless relationships with people.

QUESTIONS AND EXERCISES FOR DISCUSSION AND STUDY

- 1 • Make a chart showing the channels of influence which various persons may have on a child.
- 2 • Write your own autobiography, emphasizing critical choices and indicating factors and forces that influenced your decisions.

- 3 • In parallel columns write anecdotal records of the behavior of a ten-year-old child and your interpretations.
- 4 • Sketch a plan for a vocational-day conference for a senior high school in a suburban community. What are some of the limitations of a single-day conference?
- 5 • With other members of the class, act out interviews in which you play the role of teacher, parent, child, or counselor in a discussion of some problem selected by the group.
- 6 • Take an interest test and evaluate the results in terms of what you know about yourself.
- 7 • Work out a how-to-study unit for the grade level or subject-matter area in which you plan to teach.
- 8 • Sketch a cumulative record form that you think might be helpful at the junior high school level.
- 9 • What do you consider important personal qualities in getting a job?
- 10 • As a classroom teacher, what basic principles will you follow if you have the guidance point of view?
- 11 • Select and read five or six articles in the periodical literature included in the following references and indicate what appear to be trends in guidance in the 1950's.
- 12 • In what areas might you have desired more effective guidance? How can these needs be met for boys and girls now in school?

SELECTED REFERENCES FOR FURTHER READING AND STUDY

- American Educational Research Association. "Guidance, Counseling, and Pupil Personnel," *Review of Educational Research*, XXIV (April, 1954), pp. 109-89. Reviews the literature in this area for the three year period since April, 1951.
- Arbuckle, D. S., *Student Personnel Services in Higher Education*. New York: McGraw-Hill Book Co., 1953.
- . *Teacher Counseling*. Cambridge, Massachusetts: Eddison-Wesley, 1950.
- Association for Supervisor and Curriculum Development, *Growing Up in an Anxious Age*, 1952 Yearbook. Washington, D. C.: National Education Association, 1952.
- . *Guidance in the Classroom*, 1955 Yearbook. Washington, D. C. National Education Association, 1955.
- Ausubel, David P., *Theory and Problems of Adolescent Development*. New York: Grune and Stratton, 1954.
- Baer, Max, and E. C. Roher, *Occupational Information*. Chicago: Science Research Associates, 1951.

- Baird, C. R., "Autobiography," *Education Digest*, XIX (March, 1954), pp. 39-43.
- Beard, R. L., "Teacher versus Counselor Controversy," *High School Journal*, XXXVIII (March, 1955), pp. 198-201.
- Bennett, Margaret E., *Guidance in Groups*. New York: McGraw-Hill Book Co., 1955.
- Berdie, R. F., *After High School—What?* Minneapolis: University of Minnesota Press, 1954.
- Bernard, H. W., et al., *Guidance Services in Elementary Schools*. New York: Chartwell House, 1954.
- Bingham, W. V., and B. V. Moore, *How to Interview*, Third Rev. Ed. New York: Harper & Bros., 1941.
- Blocksma, D. D., "New Approaches to Counseling," *Journal of the National Association of Deans of Women*, XVI (June, 1953), pp. 167-70.
- Blum, M. L., and B. Balinsky, *Counseling and Psychology*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951.
- Bordin, E. S., *Psychological Counseling*. New York: Appleton-Century-Crofts, 1955.
- "Student Personnel Work and Personality Development," *Personnel and Guidance Journal*, XXXIII (December, 1954), pp. 194-98.
- Braden, M. M., "Former Students Evaluate Guidance," *Journal of Educational Research*, XLVII (October, 1953), pp. 127-33.
- Brayfield, A. H. (ed.), *Readings in Modern Methods of Counseling*. New York: Appleton-Century-Crofts, 1950.
- Brown, S. C., "Counseling Vital to Education," *Educational Leadership*, XI (April, 1954), pp. 404-8.
- Buswell, Margaret M., "The Relationship between the Social Structure of the Classroom and the Academic Success of the Pupils," *Journal of Experimental Education*, XXII (September, 1953), pp. 37-52.
- Cartwright, D., and A. Zander (eds.), *Group Dynamics: Research and Theory*. Evanston, Illinois: Row, Peterson, 1953.
- Chisholm, L. L., *Guiding Youth in the Secondary School*. New York: American Book Co., 1945.
- Cooper, A. C., "Printed Materials Available for Counseling at the College Level," *Journal of the National Association of Deans of Women*, XVIII (March, 1955), pp. 107-13.
- Cottle, W. C., "Some Common Elements in Counseling," *Personnel and Guidance Journal*, XXXII (September, 1953), pp. 4-8; *Education Digest*, XIX (November, 1953), pp. 44-46.
- Cox, P. W. L., et al., *Basic Principles of Guidance*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1948.
- Crow, L. D., and Alice Crow, *An Introduction to Guidance*. New York: American Book Co., 1951.

- Cunningham, Ruth, and associates, *Understanding Group Behavior of Boys and Girls*. New York: Bureau of Publications, Teachers College, Columbia University, 1951.
- Cyr, F. W. (ed.), *The Continuity of Guidance*. Scranton, Pennsylvania: International Textbook Co., 1939.
- Danielson, P. J., and Rothney, J. W. M., "Student Autobiography: Structured or Unstructured?" *Personnel and Guidance Journal*, XXXIII (September, 1954), pp. 30-33.
- Darley, John G., *Testing and Counseling in the High-School Guidance Program*. Chicago: Science Research Associates, 1945.
- Darling, R. J., "Student Readiness: Foundation for Student Guidance," *Journal of the National Association of Deans of Women*, XVIII (October, 1954), pp. 33-39.
- Davis, F. G., "Why Call it Guidance?" *Education*, LXXV (March, 1955), pp. 439-40.
- Detjen, E. W., and M. F. Detjen, *Elementary School Guidance*. New York: McGraw-Hill Book Co., 1952.
- D'Evelyn, K., *Individual Parent-Teacher Conferences*. New York: Teachers College, Columbia University, 1945.
- Dresse, M., and F. L. Sievers, "Status of Guidance and Pupil Personnel Services in the U. S. Office of Education," *Personnel and Guidance Journal*, XXXIII (October, 1954), pp. 105-6.
- Driver, Helen I., *Multiple Counseling*. Madison, Wisconsin: Monona Publications, 1954.
- Erickson, C. E., *A Practical Handbook for School Counsellors*. New York: The Ronald Press, 1949.
- *The Counseling Interview*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1950.
- Failor, C. W., "Group Activities in Guidance Services," *Personnel and Guidance Journal*, XXXII (March, 1954), pp. 411-14.
- Fedder, Ruth, *Guiding Home Room and Club Activities*. New York: McGraw-Hill Book Co., 1949.
- Fenlason, Anne F., *Essentials in Interviewing*. New York: Harper & Bros., 1952.
- Forrester, Gertrude, *Methods of Vocational Guidance*, Rev. Ed. Boston: D. C. Heath, 1951.
- *Occupational Literature: An Annotated Bibliography*. New York: H. W. Wilson, 1954.
- Frankel, A. H., *Handbook of Job Facts*. Chicago: Science Research Associates, 1951.
- Froe, O. D., "Negative Concept in Discipline and its Relation to Rapport in Counseling," *Educational Administration and Supervision*, XXXIX (December, 1953), pp. 470-77.
- Froelich, Clifford P., *Guidance Services in Smaller Schools*. New York: McGraw-Hill Book Co., 1950.

- and A. L. Benson, *Guidance Testing*. Chicago: Science Research Associates, 1948.
- and John G. Darley, *Studying Students*. Chicago: Science Research Associates, 1952.
- Goldman, L., "Counseling: Content and Process," *Personnel and Guidance Journal*, XXXIII (October, 1954), pp. 82-85.
- Gordon, I. J., "Guidance in the Small Community: Role of the Teacher," *Understanding the Child*, XXIII (January-April, 1954), pp. 10-15; 49-54.
- "The Teacher as a Guidance Worker: Understanding the Child's Community," *Understanding the Child*, XXIV (January, 1955), pp. 15-19.
- Gould, L. M., and H. H. Smith, "What is the Function and Role of the Senior High-School Teacher as Counselor?" *Bulletin of the National Association of Secondary-School Principals*, XXXIX (April, 1955), pp. 162-67.
- Greenleaf, W. J., *Occupations and Careers*. New York: McGraw-Hill Book Co., 1955.
- Hahn, M., and M. McLean, *General Clinical Counseling*. New York: McGraw-Hill Book Co., 1950.
- Hamilton, K., *Counseling the Handicapped*. New York: The Ronald Press, 1950.
- Hamrin, S. A., *Chats with Teachers about Counseling*. Bloomington, Illinois: McKnight and McKnight, 1950.
- *Initiating and Administering Guidance Services*. Bloomington, Illinois: McKnight and McKnight, 1953.
- and B. B. Paulson, *Counseling Adolescents*. Chicago: Science Research Associates, 1950.
- Hatch, R. N., "Elementary School Guidance—Adjunct or Axis," *High School Journal*, XXXVIII (March, 1955), pp. 202-6.
- *Guidance Services in the Elementary School*. Dubuque, Iowa: Wm. C. Brown, 1951.
- Havighurst, R. J., "Personality as a Goal of Education," *Journal of the National Association of Deans of Women*, XVI (June, 1953), pp. 149-53; *Education Digest*, XIX (October, 1953), pp. 22-24.
- (ed.), *Studying Children and Training Counselors in a Community Program*, Supplementary Educational Monographs, No. 78. Chicago: University of Chicago Press, 1953.
- Hayden, V. D., "College for Mary?" *Personnel and Guidance Journal*, XXXII (January, 1954), pp. 292-93.
- Hill, G. E., "College Proneness: Guidance Problem," *Personnel and Guidance Journal*, XXXIII (October, 1954), pp. 70-73.
- Hollinshead, B. S., *Who Should Go To College?* New York: Columbia University Press, 1952.
- Hoppock, Robert, *Group Guidance*. New York: McGraw-Hill Book Co., 1949.
- Hughell, W., and G. G. Lance, "Student-Parent-Counselor Conferences," *Personnel and Guidance Journal*, XXXI (May, 1953), pp. 509-12.

- Humphreys, J. A., and A. E. Traxler, *Guidance Services*. Chicago: Science Research Associates, 1954.
- Hutson, P. W., and K. D. Norberg (compilers), "Selected References on Guidance," *School Review*, LXI (September, 1953), pp. 361-68; LXII (September, 1954), pp. 361-68; LXIII (September, 1955), pp. 349-54.
- Hymes, James L., Jr., *Effective Home-School Relations*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1953.
- Jackson, Joseph, "The Effect of Classroom Organization and Guidance Practice upon the Personality Adjustment and Academic Growth of Students," *Pedagogical Seminary and Journal of Genetic Psychology*, LXXXIII (September, 1953), pp. 159-70.
- Jennings, Helen, *Sociometry in Group Relations*. Washington, D. C.: American Council on Education, 1948.
- Johnson, L. M., et al., "Youth with Non-academic Abilities and/or Interests," *Bulletin of the National Association of Secondary School Principals*, XXXIX (April, 1955), pp. 280-87.
- Jones, A. J., *Principles of Guidance*, Rev. Ed. New York: McGraw-Hill Book Co., 1951.
- and L. M. Miller, "National Picture of Pupil Personnel and Guidance Services," *Bulletin of the National Association of Secondary School Principals*, XXXVIII (February, 1954), pp. 105-59.
- Jones, H. L., "Counseling and Student Grouping Tendencies," *Journal of Higher Education*, XXIV (December, 1953), pp. 485-87.
- Kaback, G. R., "Role of the Teacher in a School Guidance Program," *Education*, LXXV (March, 1955), pp. 466-70.
- Kahl, Joseph A., "Educational and Occupational Aspirations of 'Common Man' Boys," *Harvard Educational Review*, XXIII (Summer, 1953), pp. 186-203.
- Kamm, R. B., "How Effective Are Our Student Personnel Programs?" *Personnel and Guidance Journal*, XXXIII (February, 1955), pp. 318-24.
- Kelley, Janet A., *Guidance and Curriculum*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1956.
- Kilmer, F. H., "Experiences in Guidance," *Bulletin of the National Association of Secondary-School Principals*, XXXVIII (December, 1954), pp. 22-27.
- Kimball, Barbara, "Case Studies in Educational Failure during Adolescence," *American Journal of Orthopsychiatry*, XXIII (April, 1953), pp. 406-15.
- Knapp, R. H., *Practical Guidance Methods for Counselors, Teachers, and Administrators*. New York: McGraw-Hill Book Co., 1953.
- Koshuk, R. P., "Studying the Whole Child through a Counseling Center," *Understanding the Child*, XXII (October, 1953), pp. 104-5.
- Lambert, H. S., "Program of Guidance in Eight Elementary Schools," *National Elementary Principal*, XXXIV (September, 1954), pp. 225-36.
- Larson, J. L., and S. R. Stinson, "Guidance is a Dynamic Process," *Nation's Schools*, LIII (May, 1954), pp. 58-61.

- Lefever, D. W., A. M. Turrell, and H. I. Weitzel, *Principles and Techniques of Guidance*, Rev. Ed. New York: The Ronald Press, 1950.
- Leonard, Edith M., et al., *Counseling with Parents in Early Childhood Education*. New York: The Macmillan Co., 1954.
- Lloyd-Jones, Esther, "Some Current Issues in Guidance," *Teachers College Record*, IL (November, 1947), pp. 77-88.
- Low, Camilla M., "What Principles of Learning Imply for Guidance," *N. E. A. Journal*, XLIV (January, 1955), pp. 18-20.
- McDaid, E. W., "Determining Individual Needs through a Guidance Counseling Testing Program," *Bulletin of the National Association of Secondary-School Principals*, XXXVIII (May, 1954), pp. 88-96.
- McKowan, H. C., *Home Room Guidance*, Second Ed. New York: McGraw-Hill Book Co., 1946.
- MacGarvey, M. S., "Some Aspects of Counseling the Physically Handicapped," *Journal of the National Association of Deans of Women*, XVIII (March, 1955), 125-27.
- Marsh, C. S., "Now Tell Me 'This, Counselor," *Junior College Journal*, XXV (February, 1955), pp. 347-50.
- Mather, C. C., "Character and Personality Development," *Bulletin of the National Association of Secondary-School Principals*, XXXIII (December, 1949), pp. 22-26.
- Mathewson, R. H., "General Guidance Counselor," *Personnel and Guidance Journal*, XXXII (May, 1954), pp. 544-47.
- *Guidance Policy and Practice*, Rev. Ed. New York: Harper & Bros., 1955.
- Matlock, J. R., "Counseling as Students View It," *Journal of the National Association of Deans of Women*, XVIII (October, 1954), pp. 7-12.
- Morris, Glyn, *Practical Guidance Methods for Principals and Teachers*. New York: Harper & Bros., 1952.
- Moser, L. F., "When Do Young People Make Decisions about College?" *School Review*, LXIII (March, 1955), pp. 158-59.
- Occupational Outlook Handbook*. Washington, D. C.: United States Department of Labor, 1957 edition.
- Ohlheiser, F. A., "Understanding Teen-agers," *Journal of the National Association of Deans of Women*, XVII (June, 1954), pp. 174-75.
- Paterson, D. G., et al., *Student Guidance Techniques*. New York: McGraw-Hill Book Co., 1938.
- Pepinsky, H. B., and P. N. Pepinsky, *Counseling Theory and Practice*. New York: The Ronald Press, 1954.
- Pourchot, L. L., and C. G. Noyce, "What is the Function and Role of the Junior High School Teacher as Counselor?" *Bulletin of the National Association of Secondary-School Principals*, XLIX (April, 1955), pp. 158-61.
- Powers, F. F., et al., *Psychology in Everyday Living*. Boston: D. C. Heath, 1938.
- Recktenwald, L. N., "Effective Interpersonal Relations in the Classroom: Psychological Interpretation," *Education*, LXXV (September, 1954), pp. 13-17.

Reilly, William, *Career Planning for High School Students*. New York: Harper & Bros., 1953.

——— *Life Planning for College Students*. New York: Harper & Bros., 1954.

Rivlin, H. N., "Mental-hygiene Movement in American Education," *National Society for the Study of Education, Fifty-fourth Yearbook, Part II*. Chicago: University of Chicago Press, 1955, pp. 7-28.

Robinson, F. P., "Guidance for All: In Principle and in Practice," *Personnel and Guidance Journal*, XXXI (May, 1953), pp. 500-04.

——— *Principles and Procedures in Student Counseling*. New York: Harper & Bros., 1950.

Roerber, E. C., G. E. Smith, and C. E. Erickson, *Organization and Administration of Guidance Services*, 2nd Ed. New York: McGraw-Hill Book Co., 1955.

Rothney, J. W. M., and Roens, Bert, *Counseling the Individual Student*. New York: William Sloane, 1949.

——— and Schmidt, L. G., "Some Limitations of Interest Inventories," *Personnel and Guidance Journal*, XXXIII (December, 1954), pp. 199-204; *Education Digest*, XX (March, 1955), pp. 41-43.

Sarasohn, C. L., "Point of Departure for the High School Counselor," *Journal of the National Association of Deans of Women*, XVIII (March, 1955), pp. 113-19.

Schwebel, M., and E. Harris, *Health Counseling*. New York: Chartwell House, 1951.

Sears, P. S., "Emotional Maturity and Guidance," *National Elementary Principal*, XXXIV (September, 1954), pp. 161-68.

Shaffer, E. E., "The Autobiography in Secondary School Counseling," *Personnel and Guidance Journal*, XXXII (March, 1954), pp. 395-98.

Shartle, C. L., *Occupational Information*, Sec. Ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1952.

Shoben, F. J., Jr., "Student Personnel Work: Worry and a Vision," *Personnel and Guidance Journal*, XXXIII (November, 1954), pp. 152-56.

Shostrom, F. L., and L. M. Brammer, *The Dynamics of the Counseling Process*. New York: McGraw-Hill Book Co., 1952.

Simon, R., and G. G. Thompson, "A Study of Teacher Actions Desired by Pupils in Certain Classroom Situations," *Journal of Child Behavior*, II (1950), pp. 86-97.

Smith, Glenn E., *Counseling in the Secondary School*. New York: The Macmillan Co., 1955.

——— *Principles and Practices of the Guidance Program*. New York: The Macmillan Co., 1951.

Splaver, Sarah, *Occupational Books*. Washington, D. C.: Biblio Press, 1952.

Spraggs, P. F., "Co-operate in the Guidance Program," *Agricultural Education Magazine*, XXVI (September, 1953), p. 69.

- Stone, D. R., "Teacher and Administrator Attitudes Toward Counseling," *Personnel and Guidance Journal*, XXXIII (January, 1955), pp. 287-88.
- Strang, R. M., "Characteristics of a Classroom which Promotes Mental Health," *Nervous Child*, X, No. 3-4 (1954), pp. 363-67.
- *Counseling Techniques in College and Secondary School*, Rev. Ed. New York: Harper & Bros., 1949.
- *Educational Guidance: Its Principles and Practice*. New York: The Macmillan Co., 1948.
- "Guidance: Its Larger Responsibilities," *Teachers College Record*, LVI (April, 1955), pp. 365-70.
- "How Guidance Relates to the Curriculum," *Personnel and Guidance Journal*, XXXII (January, 1954), pp. 262-65; *Education Digest*, XIX (April, 1954), pp. 34-36.
- *The Role of the Teacher in Personnel Work*, Fourth Ed. New York: Teachers College, Columbia University, 1953.
- and A. I. Oliver, "Talented Youth in the Comprehensive Secondary School," *Bulletin of the National Association of Secondary-School Principals*, XLIX (April, 1955), pp. 288-91.
- (ed.), *Unity Within Guidance*. Syracuse, New York: Syracuse University Press, 1953.
- Strong, E. K., Jr., "Permanence of Interest Scores over Twenty-two Years," *Journal of Applied Psychology*, XXXV (1951), pp. 89-91.
- *Vocational Interests of Men and Women*. Stanford, Cal.: Stanford University Press, 1943.
- Super, D. E., *Appraising Vocational Fitness*. New York: Harper & Bros., 1949.
- "Guidance: Manpower Utilization or Human Development?" *Personnel and Guidance Journal*, XXXIII (September, 1954), pp. 8-14.
- "Resources for Guidance: Whence and By Whom?" *Personnel and Guidance Journal*, XXXII (February, 1954), pp. 359-60.
- et al., *Vocational Development: A Framework for Research*. New York: Teachers College, Columbia University, 1957.
- Taba, Hilda, et al., *Diagnosing Human Relations Needs*. Washington, D. C.: American Council on Education, 1951.
- Taibl, R. M., "Guidance for the Handicapped," *N.E.A. Journal*, XLIII (April, 1954), p. 234.
- Terman, L. M., and M. H. Oden, *Genetic Studies of Genius, IV: The Gifted Child Grows Up*. Stanford, California: Stanford University Press, 1947.
- Tiedeman, D. V., and J. G. Bryan, "Prediction of College Field of Concentration," *Harvard Educational Review*, XXIV, No. 2 (1954), pp. 122-39.
- Torgerson, T. L., *Studying Children*. New York: The Dryden Press, 1947.
- Traxler, A. F., "Emerging Trends in Guidance," *School Review*, LVIII (1950), pp. 14-23.

- *How to Use Cumulative Records*. Chicago: Science Research Associates, 1947.
- *Techniques of Guidance*. New York: Harper & Bros., 1945.
- Tyler, Leona, *The Work of the Counselor*. New York: Appleton, 1953.
- "Development of Vocational Interests: Organization of Likes and Dislikes in Ten-year Old Children," *Journal of Genetic Psychology*, LXXXVI (March, 1955), pp. 33-44.
- Ullmann, C. A., *Identification of Maladjusted School Children*, Public Health Monograph, No. 7. Washington, D. C.: U.S. Government Printing Office, 1952.
- Warnath, C. F., "General Counselor and Interpersonal Relations," *Personnel and Guidance Journal*, XXXIII (February, 1955), pp. 325-27.
- Warters, Jane, *Techniques of Counseling*. New York: McGraw-Hill Book Co., 1954.
- Wattenberg, W. W., "Who Needs Counseling?" *Personnel and Guidance Journal*, XXXII (December, 1953), pp. 202-5; *Education Digest*, XIX (February, 1954), pp. 45-47.
- Weitz, H., "Instruction and Guidance in Education," *Educational Forum*, XIX (January, 1955), pp. 169-77.
- Weller, L., "Guidance Specialists in the Elementary School," *National Elementary Principal*, XXXIV (September, 1954), pp. 222-24.
- Whitaker, M., "Relationship between Guidance and Extra-curricular Activities," *School Activities*, XXVI (January, 1955), pp. 157-58.
- Wiley, Roy DeVerl, *Guidance in Elementary Education*. New York: Harper & Bros., 1952.
- and Dean C. Andrew, *Modern Methods and Techniques in Guidance*. New York: Harper & Bros., 1955.
- Williamson, E. G., *Counseling Adolescents*, revision of *How to Counsel Students*. New York: McGraw-Hill Book Co., 1950.
- "Discipline and Counseling," *Education*, LXXIV (April, 1954), pp. 512-18.
- (ed.), *Trends in Student Personnel Work*. Minneapolis: Lund Press, 1949.
- and J. D. Foley, *Counseling and Discipline*. New York: McGraw-Hill Book Co., 1949.
- Woolf, M. D., and J. A. Woolf, *The Student Personnel Program: Its Development and Integration in the High School and College*. New York: McGraw-Hill Book Co., 1953.
- Worhois, G. M., "Effect of a Guidance Program on Emotional Development," *Journal of Applied Psychology*, XXXI (1947), 169-81.
- Wright, Barbara, *Practical Handbook for Group Guidance*. Chicago: Science Research Associates, 1948.
- Yale, John R. (ed.), *Frontier Thinking in Guidance*. Chicago: Science Research Associates, 1945.

- *How to Build an Occupational Information Library*, Rev. Ed. Chicago: Science Research Associates, 1946.
- Yates, V. M., "Bert Found a Niche," *Personnel and Guidance Journal*, XXXII (May, 1954), pp. 548-49.
- Young, F. C., "Evaluation of a College Counseling Program," *Personnel and Guidance Journal*, XXXIII (January, 1955), pp. 282-86.
- Zerfoss, Karl (ed.), *Readings in Counseling*. New York: Association Press, 1952.

APPENDIX

A

BASIC STATISTICAL CONCEPTS

Some Basic Statistical Concepts

Test results are of relatively little value unless they are interpreted wisely and well. To study test data for such interpretation, a teacher or school officer may use as tools certain statistical concepts. Only a few of the fundamental concepts are presented here. Those who intend to study the statistical interpretation of tests more comprehensively will need to take special courses in the theory and application of statistical techniques.

The beginning student in psychology and education will doubtless meet many statistical terms and concepts which should have at least superficial meaning for him. A study by Mathews¹ led him to conclude that, based on a consensus of school teachers and officers, the following concepts are most often encountered: construction and interpretation of charts, tables, and distributions; computation of measures of central tendency, quartile points, percentiles, and quartile deviations; interpretation of standard deviation and correlation coefficients.

In an analysis of statistical concepts in professional journals, Dickey² found the following most frequently encountered: *measures of central tendency*: mean, median, average; *measures of variability*: standard deviation, range, quartile deviation; *correlation*: Pearson r , rank order correlation.

¹ Mathews, C. O., "The Introductory Course in Educational Measurements," *Educational Administration and Supervision*, Vol. XXI (1935), pp. 431-47.

² Dickey, J. W., "Statistical Ability Necessary to Read Education Journals," *Journal of Educational Psychology*, Vol. XXVII (1936), pp. 149-54.

Tabulation and Classification

One of the first steps in the handling of test scores is that of tabulation and classification. The teacher may have administered a vocabulary test in reading, for example, to 25 pupils. Various pupils in the class have obtained the following scores: 16, 19, 23, 14, 17, 18, 20, 19, 16, 13, 24, 21, 17, 25, 16, 15, 20, 22, 14, 9, 23, 20, 25, 19, 10. An examination of this group of scores will reveal that the highest score is 25 and the lowest is 9. The teacher will be aided in his understanding of the scores if he will arrange them in descending order, as follows: 25, 25, 24, 23, 23, 22, 21, 20, 20, 20, 19, 19, 19, 18, 17, 17, 16, 16, 16, 15, 14, 14, 13, 10, 9.

This series of scores, however, may be condensed in even more concise form for the 25 pupils. This may be done by setting up the scores into step intervals, let us say, intervals of 5. They might be grouped, for example, as shown in Table 4. Such a grouping of scores is called a "frequency distribution," because the frequency of occurrence of scores for each step interval is indicated in the form of a table.

TABLE 4. Grouped tabulation of scores for a vocabulary test

<i>Scores</i>	<i>Frequency</i>
21-25	7
16-20	12
11-15	4
6-10	2
N=	25

Some suggestions for making the frequency table are: (1) determine the range, which is the difference between the highest and lowest scores; (2) select a class interval that will be convenient for tabulation; (3) write the limits of the class intervals in a left-hand column; and (4) tally the scores by making a short line for each score opposite the class interval into which it falls, and count these lines for the frequency of each class.

Table 4 indicates a frequency of 7 scores in the step interval 21-25, 12 in the step interval 16-20, 4 in the step interval 11-15, and 2 in

the step interval 6-10. It is easy to see the advantage of grouping scores into a frequency distribution and using step intervals, particularly if the number of cases which are to be handled is large.

TABLE 5. Scores of a reading test

Scores	Number of Pupils (Frequency)	Scores	Number of Pupils (Frequency)
35-36	1	21-22	18
33-34	0	19-20	13
31-32	2	17-18	13
29-30	4	15-16	5
27-28	6	13-14	4
25-26	12	11-12	2
23-24	17	9-10	1

The handling of a tabulation may be illustrated further by the data that are presented in Table 5, representing the scores achieved by 98 pupils on a reading test. In this instance the scores have been made into a frequency distribution with step intervals of 2, rather than 5 as in Table 4.

Sometimes teachers wish to have the distributions of scores repre-

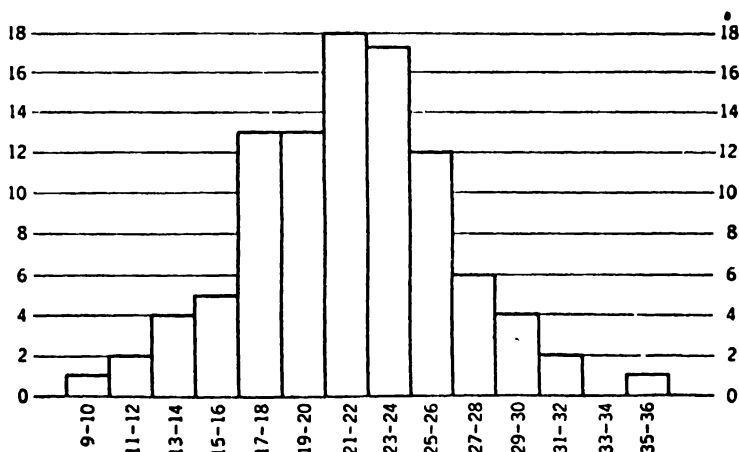


Fig. 13. A frequency histogram showing distribution of scores on a reading test.

sented graphically. For this purpose the frequency histogram is used. It is simple and easily made and shows at a glance the distribution of scores achieved by pupils. Figure 13 is a frequency histogram of the frequency distribution given in Table 5.

The advantages of such concise summarization of test data into the frequency distribution, or its graphic equivalent, the frequency histogram, permit easy visualization and estimation of such statistics as median, mean, quartiles, quartile deviation, and standard deviation.

When data are summarized in a frequency table, it is important to remember that the assumption is made by the reader that all the cases in a step interval are distributed evenly throughout the interval. When the number of cases is sufficiently large, this assumption is well founded. When the number of cases is small, the error that may follow basing computations on this assumption is slightly larger than when the number of cases is large.

Measures of Central Tendency or Average

Measures of central tendency are often called the "average." Average is employed in two different senses by many persons. In statistics it is used as a general term to include the mean, median, mode, and all other measures of central tendency. Its other use is that common in elementary arithmetic and in ordinary conversation. In this sense it is the arithmetic average and refers to the sum of a number of measures or quantities divided by their number. It is recommended by most statisticians, however, that the term *mean* be used in place of arithmetic average.

MEDIAN

Perhaps the most commonly used average in educational writings is the median. Its ease of computation may account for this. The median is that point on the scale which divides the total number of measures or cases into two equal groups. For example, if there are 80 cases, the median is a point at which 40 of the cases lie at or below it and 40 at or above it. In other words, it is the fiftieth percentile point of a distribution. Sometimes a distinction is made between a grouped distribution or frequency table and a simple or ungrouped series in that the "median" is used in connection with the former and *mid-score* or *mid-point* with the latter. The term "median" is generally used to include both series of measures.

Table 6 illustrates the method of locating or computing the median in a frequency distribution. The steps of the process are summarized at the side of the table. At the same time, the first quartile, Q_1 , and third quartile, Q_3 , are indicated for later reference.

TABLE 6. Computation of the median and quartiles.

Score Intervals	Frequency (f)	Steps in the Computation
95-99	1	Median
90-94	2	Step 1. Since half (50%) of the frequencies is required, $\frac{1}{2}$ of 98 = 49.
85-89	5	
80-84	8	
75-79	10	Step 2. To locate the approximate median, count up the frequency column to the interval containing the 49th frequency, or the top of the 60-64 interval. This provides 37 cases with 12 more required to make 49.
70-74	14	
65-69	21	
60-64	13	Step 3. The step interval containing the median is 65-69, which contains a frequency of 21; thus, the median is $1\frac{1}{2}_{21}$ of the distance up this interval of 5; hence, $1\frac{1}{2}_{21} \times 5 = 6\frac{6}{21} = 2.86$, which is the correction to be added.
55-59	9	
50-54	8	
45-49	3	Step 4. Add the correction 2.86 to the lower limit, 64.5, of the interval 65-69, and the median is 67.36.
40-44	1	
35-39	1	
30-34	1	Q_1 and Q_3
25-29	1	Follow the same steps as for median, except that $Q_1 = \frac{1}{4}$ and $Q_3 = \frac{3}{4}$ of the frequencies. $Q_1 = \frac{1}{4}$ of 98 = 24.5; $\frac{1}{4}_{13} \times 5 = 2\frac{5}{13} = .19$; 59.5 + .19 = 59.69. $Q_3 = \frac{3}{4}$ of 98 = 73.5; $1\frac{5}{10} \times 5 = 7\frac{5}{10} = .75$; 74.5 + .75 = 75.25.
	N = 98	

Note: On account of statistical theory, for computational purposes the intervals are considered as beginning .5 of a point below the designation. Thus, 25 = 24.5, 30 = 29.5, and so forth.

TABLE 7. Computation of the mean and standard deviation.

Score Intervals	Frequency (f)	Deviation (d)	(f) × (d)	(f) × (d) ²	Steps in the Computation
95-99	1	6	6	36	<p>Mean</p> <p>Step 1. Guess a mean (M^1) near the center of the distribution; here the midpoint of the 65-69 interval, or $M^1 = 67$.</p> <p>Step 2. Lay off the deviations (d) from the guessed mean, as in Column 3 of the table.</p> <p>Step 3. Multiply each (f) by its (d), as in Column 4 of the table.</p> <p>Step 4. Obtain the algebraic sum of the (f) × (d) column, $\sum fd$, which here are +94 and -93 or +1.</p> <p>Step 5. Compute the correction $+1 \div 98 = .01 \times 5 = .05$.</p> <p>Step 6. Add the correction to the guessed means $67.00 + .05 = 67.05$ or the true mean.</p> <p>Standard Deviation</p> <p>Step 7. Compute the (f) × (d)², as in Column 5 of the table.</p> <p>Step 8. Obtain the sum of (f) × (d)², $\sum fd^2$, which here is 635.</p> <p>Step 9. Substitute in the formula for standard deviation</p> $\sigma = i \sqrt{\frac{\sum fd^2}{N} - c^2},$ $\sigma = 5 \sqrt{\frac{635}{98} - .0001}$ $= 5 \times 2.54 = 12.70$
90-94	2	5	10	50	
85-89	5	4	20	80	
80-84	8	3	24	72	
75-79	10	2	20	40	
70-74	14	1	14	14	
65-69	21	0			
60-64	13	-1	-13	13	
55-59	9	-2	-18	36	
50-54	8	-3	-24	72	
45-49	3	-4	-12	48	
40-44	1	-5	-5	25	
35-39	1	-6	-6	36	
30-34	1	-7	-7	49	
25-29	1	-8	-8	64	
$M^1 = 67 \quad N = 98$			$+ 94$ $- 93$ <hr/> $+ 1$	635	

$$c = \frac{1}{98} = .01. \quad c^2 = .0001.$$

$$M = M^1 + \frac{\sum fd}{N} = 67.00 + \frac{1}{98} \times 5 = 67.05.$$

$$\sigma = i \sqrt{\frac{\sum fd^2}{N} - c^2} = 5 \sqrt{\frac{635}{98} - .0001} = 5 \times 2.54 = 12.70$$

In summary, the median, or fiftieth percentile, and any other percentile points are located by dividing the total number of frequencies by the given percentile, counting up the frequency column as far as possible without passing the required point, determining the fractional distance into the next step interval to the required point, multiplying this fraction by the size of the step interval, and adding this result to the lower limit of the step interval in which the median or other percentile is located.

MEAN

A more precise mathematical statistic than the median is the *mean*. The mean is found by adding a series of scores together and dividing the sum by the number of cases involved in order to obtain an arithmetic average, or mean. The mean is different from the median in that it involves a contribution of size from each of the scores in the series, whereas the median is influenced only slightly by any unusual scores at the ends of the frequency distribution. Also, in order to obtain a more precise measure of variability, or spread, which is called the "standard deviation," it is necessary to compute and to use the mean. In Table 7 a very simple example of how to compute the mean by the so-called "short method" is illustrated. The table also contains the computation of the standard deviation, but this part of the table should be disregarded until it is discussed later. The formula for find-

ing the mean by the "short method" is $M = M' + \frac{\sum fd}{N} i$. In the

formula $M = \text{Mean}$, $M' = \text{Guessed Mean}$, $\sum fd = \text{Sum of frequencies multiplied by their respective deviations}$, $N = \text{Total number of frequencies}$, and $i = \text{Interval of grouped scores}$. ¶

In summary, the steps for computing the mean by the "short method" are to guess a mean near the center of the distribution, to lay off the deviations of intervals from the guessed mean, to multiply the frequency of each interval by its deviation, to obtain the algebraic sum of the frequencies times the deviations, to compute the correction for guessing and to multiply it by the interval, and to add this result to or subtract it from the guessed mean.

The mean obtained by this method will vary slightly from the mean obtained by actually adding all the individual scores and dividing by the total frequencies. As a rule, the difference is so slight as to make no practical difference in the interpretation of this statistic.

MODE

The mode of a distribution is that point on the scale at which more measures are found than at any other point. Thus, in a sense, the mode may be said to be the typical value or case. In a grouped distribution or frequency table, the true mode cannot be determined by inspection but requires rather difficult computations. It is not widely used in educational and psychological research. The mode is also used in a broader and less precise sense to apply to any point on the scale where the frequencies are largest. This point is sometimes called the "major mode."

When two values appear a large number of times in different parts of the distribution, we have a bimodal distribution; a trimodal distribution if three modes appear; and so forth.

Measures of Variability or Deviation

No distribution of scores is adequately described by a measure of central tendency. Two groups of pupils may have the same median or mean score but have different variability, or deviation, of the scores. The spread or scatter of a set of measures about a point, which is almost always a measure of central tendency—that is, an average—is the *deviation*. It is commonly measured by any one of several measures of deviation, or variability, each of which yields a summary statement from a slightly different standpoint. Such measures as the range, the quartile deviation, and the standard deviation are illustrations.

RANGE

The *range* of a series of scores or other measures is the distance from the lowest to the highest measure. Thus, the range of a series of test scores of which the lowest is 10 and the highest 53 is from 10 to 53, or 43 points.

QUARTILE DEVIATION

The *quartile deviation* is a commonly used measure of deviation, or variability, of a distribution of scores about the median. It is one-half the difference between the points at the twenty-fifth and seventy-fifth percentiles in a frequency distribution of measures. These are denoted as Q_1 and Q_3 , respectively.

For making comparisons between groups which have been administered the same test, one of the most easily computed measures of

scatter, or variability, is the quartile deviation Q . It is sometimes called the *semi-interquartile range*. It is one-half the distance from the first to the third quartile. In formula form it may be indicated thus:

$$Q = \frac{Q_3 - Q_1}{2}$$

Using this formula for the data in Table 6, we find that

$$Q = \frac{75.25 - 59.69}{2} = \frac{15.56}{2} = 7.78.$$

If we assume that the distribution of scores is symmetrical, then the distance from the first quartile to the median would be exactly the same as from the median to the third quartile. In the case of Table 6, this would mean that if the distribution were exactly symmetrical, Q_1 would be 7.78 below the median 67.36 and Q_3 would be 7.78 above the median. Unless a distribution is decidedly unusual in its shape, the percentage of cases included within the distance of Q on both sides of the median constitutes 50 per cent of the cases.

STANDARD DEVIATION

The *standard deviation* is one of the two or three most common measures of deviation, or variability. It is based upon the squares of the actual deviations and is always found about the mean. In a normal distribution or curve it represents the distance from the mean to the point of inflection, that is, the point at which the shape of the curve changes from an angle of more than 45° with the base line to one of less than that amount. Furthermore, in a normal distribution, a distance of one standard deviation on either side of the mean includes 34.13 per cent of the area of the curve or, in other words, of the number of cases. Therefore, 68.26 per cent of the cases in a normal distribution lie not more than one standard deviation above and below the mean.

In a simple formula form, for a series of ungrouped scores the formula is:

$$\sigma = \sqrt{\frac{\sum D^2}{N}}$$

Expressing this in words: The standard deviation is obtained by getting the sum of the deviations squared of all of the scores in the series from the actual mean score and dividing by the number of cases, and then extracting the square root. This computation may sound slightly complicated, but the actual process is fairly easy.

For a series of scores grouped into intervals in a frequency table, the formula is:

$$\sigma = i \sqrt{\frac{\sum fd^2}{N} - c^2}$$

The calculation and explanation of this formula are illustrated in steps 7, 8, and 9 of Table 7. It is essential, of course, to calculate the mean as illustrated for the "short method" of calculation. The additional steps for the calculation of the standard deviation of a grouped series of scores are to multiply each frequency by its deviation squared, to find the sum of these fd^2 , to divide this sum by the N , or total frequencies, to subtract the correction squared, to extract the square root of this result, and to multiply by the interval size, which in this instance is 5. The standard deviation thus obtained may be used for a variety of purposes. One of the most common purposes is to compare the relative homogeneity or heterogeneity of groups of pupils who have been administered the same test.

Measures of Correlation

When two sets of scores for the same individuals are to be compared, some method of correlation is ordinarily used. If the same pupils have taken a paragraph meaning test and a word meaning test, their scores may be correlated to determine how closely similar the achievement of the pupils was on these two tests.

The two methods most commonly used are the *rank-order* method and the *product-moment* method. Of these the rank-order method, called "*rho*," is the simpler and is especially used when the number of cases does not exceed 30 to 40 individuals. Both correlation methods give approximately the same coefficient of correlation. The rank method, however, does not take into account the exact magnitude of each score, which the product-moment method does. A sample showing of computation of *rho* is presented in Table 8.

It will be noted that in Table 8 the rank order for Test 1 was found

for each pupil, and in a similar manner the rank order for Test 2. The differences in rank were computed, and then these differences were squared. The formula for ρ is given under the table, and the materials are self-explanatory.

PRODUCT-MOMENT CORRELATION

This name is given to the usual method of computing the coefficient of correlation, a method devised by Karl Pearson. For a small number of cases, perhaps less than 25 or 30, the data are usually arranged in two columns, the corresponding entries in which consti-

TABLE 8. Computation of ρ (rank order) correlation coefficient.

Students	Test 1 Para- graph Meaning	Test 2 Word Meaning	Rank Test 1	Rank Test 2	Differ- ence in Rank	(Differ- ence) ²
A	21	14	12.	13.5	1.5	2.25
B	26	24	8.	7.	1.0	1.00
C	26	26	8.	2.5	5.5	30.25
D	20	19	13.	11.	2.0	4.00
E	28	26	3.	2.5	.5	.25
F	27	26	5.5	2.5	3.0	9.00
G	18	14	14.	13.5	.5	.25
H	27	21	5.5	9.5	4.0	16.00
I	26	21	8.	9.5	1.5	2.25
J	24	17	10.5	12.	1.5	2.25
K	28	26	3.	2.5	.5	.25
L	28	25	3.	5.5	2.5	6.25
M	30	25	1.	5.5	4.5	20.25
N	24	22	10.5	8.	2.5	6.25

Number of Students = 14.

Sum of Differences Squared = 100.50

Step 1. Obtain raw scores on two tests.

Step 2. Assign rank order for each pupil on Test 1, then on Test 2. When two or more scores are of the same size, the ranks are added and the mean assigned; e.g., $1 + 2 + 3 + 4 = 10 \div 4 = 2.5$ in the above table.

Step 3. Compute difference in ranks for each pupil.

Step 4. Compute square of each difference.

Step 5. Add the squares and apply the formula for ρ correlation.

$$\rho \text{ is } 1 - \left(\frac{6 \times \text{Sum of (Differences)}^2}{\text{Number} \times [(\text{Number})^2 - 1]} \right).$$

Applying this formula to the present tests, we have:

$$\begin{aligned} 6 \times 100.5 &= 603 \\ 14 \times (196 - 1) &\text{ or } (195) = 2730 \\ 603 \div 2730 &= .22 \\ 1 - .22 &= .78 \end{aligned}$$

The rank order correlation for the tests is .78.

tute a pair of measures; whereas for larger numbers of cases, a correlation or double-entry table is almost always used. The formula used in product-moment correlation compares the deviations of the corresponding pairs of measures from their means with the standard deviations of the two distributions, and thus yields the coefficient of correlation.

A simple form of this method of calculating the coefficient of correlation is illustrated in Table 9. This form is used when the number of cases is small. The basic formula, however, is exactly the same as for a large number of cases. It is

$$r = \frac{\frac{\sum xy}{N} - c_x c_y}{\sigma_x \sigma_y}$$

In this formula, the σ_x and σ_y are computed in exactly the same manner as described in steps 7, 8, and 9 of Table 7. The entire process of calculation is as follows:

STEPS IN COMPUTING THE PRODUCT-MOMENT r

Step 1. For each of the two series of scores X and Y , obtain the deviation of each score from its respective mean. Although the true mean may be used, it is seldom a whole number; therefore, it is generally more economical of time and effort to work from an assumed mean. The assumed mean of the X series is selected as 25, and of the Y series as 22. Each deviation of an X score from its assumed mean is indicated by x , and each deviation of a Y score from its assumed mean is indicated by y . The plus or minus signs of the deviations must be indicated for use in the next steps. In the x column, for example: $21 - 25 = -4$, $26 - 25 = +1$, and so forth.

Step 2. Compute the square of each deviation. Enter these squares in the columns headed x^2 and y^2 . For example, the first three deviations squared in the x column are: $-4^2 = 16$, $+1^2 = 1$, $+1^2 = 1$.

Step 3. Compute the product of each pair of deviations. To obtain this, each x is multiplied by its respective y . For example, the first three products are as follows: $-4 \times -8 = 32$; $+1 \times +2 = 2$; $+1 \times +4 = 4$; and so forth. It is important to watch plus and minus signs carefully to obtain the algebraic sum.

Step 4. Substitute the numbers for corresponding characteristics in the formula, $\Sigma \frac{xy}{N}$. $\Sigma xy = 167$, which is the algebraic sum of the xy column, is

divided by N , which is 14. The resulting quotient is 11.93. c_x is the algebraic sum of the x column divided by N , and c_y is the algebraic sum of the y column divided by N . For the data in Table 9, c_x is $+.21$ and c_y is $-.14$. Their product, $c_x \cdot c_y$ is $-.03$. Since the formula is

$$\frac{xy - c_x c_y}{\sigma_x \sigma_y}$$

the substitution is $11.93 - (-.03)$ or $11.93 + .03 = 11.96$. The product of $\sigma_x \sigma_y$ is $3.32 \times 4.22 = 14.01$. The final calculation is $11.96 \div 14.01 = .85$, which is the r .

The coefficients of correlation range from a maximum of $+1.00$ down to zero and from zero down to -1.00 . A perfect correlation means that each pupil's score in one series corresponds exactly with his score in the other series on the basis of the relative size of the

TABLE 9. Computation of the product-moment correlation.

Scores		Deviations		Deviations Squared		Product of Deviations
X	Y	x	y	x ²	y ²	
21	14	-4	-8	16	64	32
26	24	+1	+2	1	4	2
26	26	+1	+4	1	16	4
20	19	-5	-3	25	9	15
28	26	+3	+4	9	16	12
27	26	+2	+4	4	16	8
18	14	-7	-8	49	64	56
27	21	+2	-1	4	1	-2
26	21	+1	-1	1	1	-1
24	17	-1	-5	1	25	5
28	26	+3	+4	9	16	12
28	25	+3	+3	9	9	9
30	25	+5	+3	25	9	15
24	22	-1	0	1	0	0

$M_x = 25$	$M_y = 22$	+21	+24	155	250	+170
		-18	-26			-3
		<hr/>	<hr/>			<hr/>
		+3	-2			+167

$$c_x = +3 \div 14 = +.21$$

$$c_x^2 = .04$$

$$\sigma_x^2 = 155 \div 14 = 11.07 - .04 = 11.03$$

$$\sigma_x^2 = 250 \div 14 = 17.86 - .02 = 17.84$$

$$\frac{\Sigma xy}{N} = 167 \div 14 = 11.93$$

$$c_y = -2 \div 14 = -.14$$

$$c_y^2 = .02$$

$$\sigma_x = \sqrt{11.03} = 3.32$$

$$\sigma_y = \sqrt{17.84} = 4.22$$

$$r = \frac{\frac{\sum xy}{N} - c_x c_y}{\sigma_x \sigma_y} = \frac{11.93 - (.21 \times -.14)}{3.32 \times 4.22} = \frac{11.93 + .03}{14.01} = .85$$

scores. If the agreement is perfect, a value of $+1.00$ is obtained. If the disagreement is as large as possible, a value of -1.00 is obtained. If there is no relationship at all, neither agreement nor disagreement, it is $.00$. Intermediate values indicate various degrees of agreement or disagreement.

Correlation has practical uses, which are mainly to discover the relationships between various factors in learning and in testing. Frequently scores on odd items of a test are correlated with scores on the even items for a group of pupils in order to determine the coefficient of reliability of a test. These few indications of the uses of correlation show only elementary application to educational and testing problems.

Knowledge of a few statistical techniques and processes does not qualify a teacher as a statistician. Knowledge of a few processes will assist the teacher in making a better analysis and interpretation of test data. The teacher should be very cautious in making generalizations about statistical data until a fuller knowledge of statistical theory and practice has been obtained.

APPENDIX

B

LIST OF FILMS

The films listed below may be used by teachers of educational psychology for the purpose of reinforcing the learning of facts, procedures, techniques, and principles. Although several films have been listed, instructors will not have the time to use all of them. If the instructor will preview the films, he will know which ones are best for his purposes. It is suggested that the showing of films to classes be followed by class discussion.

All films listed below are 16mm. sound. Many of these films can be secured from local film libraries, State Departments of Education, mental health organizations, the Film Libraries of many of our colleges and universities, such as New York University, Pennsylvania State University, Southern Illinois University, Teachers College of Columbia University, University of Iowa Child Welfare Research Station, and Indiana University. Other distributors include the following:

Carl F. Mahnke, 215 East Third Street, Des Moines, Iowa
Coronet Instructional Films, 65 East South Water Street, Chicago 1, Ill.
Encyclopedia Britannica Films, 1150 Wilmette Avenue, Wilmette, Ill.
Illinois State Education Department, Springfield, Ill.
International Film Bureau, 57 East Jackson Boulevard, Chicago, Ill.
McGraw-Hill Text Film Department, 330 West 42nd St., New York 36, N.Y.
Mental Health Film Board, 166 East 38th St., New York 16, N.Y.
Mental Health Materials Center, 1790 Broadway, New York 19, N.Y.
National Educational Association, 1201 16th St., N.W., Washington, D.C.
United World Films, 1445 Park Avenue, New York 19, N.Y.

CHAPTER 1

CHAPTER 2

CHAPTER 3

CHAPTER 4

Life With Baby (McGraw-Hill), 18 min.
Curriculum Based on Child Development (McGraw-Hill), 12 min.

- Farewell to Childhood* (McGraw-Hill), 23 min.
Principles of Development (McGraw-Hill), 17 min.
Children's Emotions (McGraw-Hill), 22 min.
Social Development (McGraw-Hill), 16 min.
Growth: A Study of Johnny and Jimmy (International Film Bureau),
silent, 43 min.
Child Care and Development (McGraw-Hill), 20 min.
Developmental Characteristics of Pre-Adolescents (McGraw-Hill), 20
min.
Meaning of Adolescence (McGraw-Hill), 20 min.

CHAPTER 5

- Testing Intelligence with the Stanford-Binet* (Indiana University), 18
min.
Testing the IQ (International Film Bureau), 11 min.

CHAPTER 6

- Individual Differences* (McGraw-Hill), 23 min.
Discovering Individual Differences (McGraw-Hill), 30 min.
Each Child is Different (McGraw-Hill), 20 min.

CHAPTER 7

- Successful Scholarship* (McGraw-Hill), 10 min.
Children Learning by Experience (British Information Service), 31 min.
Importance of Goals (McGraw-Hill), 19 min.
How We Learn (Coronet Instructional Films), 11 min.
How to Study (Coronet Instructional Films), 10 min.
How to Remember (Coronet Instructional Films), 11 min.
How to Find the Answer (Coronet Instructional Films), 11 min.
How Effective is Your Reading (Coronet Instructional Films), 11 min.
Learning from Class Discussion (Coronet Instructional Films), 11 min.
Changes in Group Atmosphere (University of Iowa), 15 min.
Social Climate of Groups (University of Iowa), 15 min.
Making Learning More Meaningful (McGraw-Hill), 10 min.
How to Develop Interest (Coronet Instructional Films), 10 min.

CHAPTER 8

- Motivation and Research in Learning* (PCR), 15 min.
Motivating the Class (McGraw-Hill), 19 min.
Importance of Goals (McGraw-Hill), 19 min.
How to Develop Interest (Coronet Instructional Films), 11 min.
Attitudes and Health (Coronet Instructional Films), 11 min.

CHAPTER 9

- Perceptual and Motor Development* (Pennsylvania State University),
silent, 18 min.

CHAPTER 11

How to Think (Coronet Instructional Films), 14 min.

Defining the Problem and Gathering Information (McGraw-Hill), 18 min.

Using Information to Solve Problems (McGraw-Hill), 16 min.

Problem Solving in Infants (International Film Bureau), silent, 29 min.

CHAPTER 13

Learning to Understand Children: Part I, "A Diagnostic Approach" (McGraw-Hill), 21 min.

Learning to Understand Children: Part II, "A Remedial Approach" (McGraw-Hill), 23 min.

Angry Boy (Mental Health Film Board), 33 min.

Children's Emotions (McGraw-Hill), 22 min.

Fears of Children (Mental Health Film Board), 30 min.

Activity Group Therapy (Columbia University), 50 min.

CHAPTER 14

Who is a Delinquent (RKO), 20 min.

Children on Trial (British Information Services), 60 min.

Children's Village (RKO), 20 min.

Children of the City (British Information Service), 30 min.

Problem Children (Ohio State Division of Mental Health), 20 min.

Who's Delinquent? (McGraw-Hill), 16 min.

CHAPTER 15

Pay Attention: Problems of Hard of Hearing Children (Pennsylvania Cinema Register), 29 min.

Report on Donald (University of Minnesota), 20 min.

Education of Exceptional Children (University of Illinois), 25 min.

For Those Who Are Exceptional (State Education Department, Springfield, Ill.), 40 min.

CHAPTER 16

The Nation's Mental Health (March of Time), 18 min.

Mental Health (Encyclopedia Britannica Films), 12 min.

Emotional Health (McGraw-Hill), 20 min.

Angry Boy (International Film Bureau), 33 min.

Overcoming Fear (Coronet Instructional Films), 13 min.

Problem Children (Ohio State Division of Mental Health), 20 min.

Problem of Pupil Adjustment—The Drop-out (McGraw-Hill), 20 min.

Problem of Pupil Adjustment—The Stay-in (McGraw-Hill), 19 min.

Shyness (McGraw-Hill), 23 min.

CHAPTER 18

Counseling—Its Tools and Techniques (Carl F. Mahnke Productions—Michigan State University), 22 min.

A Guidance Problem for School and Home (Guidance Laboratory—Teachers College, Columbia University), 2 reels, 18 min.

Aptitudes and Occupations (Coronet Instructional Films), 18 min.

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